



# **US ROCKIES REGION PLANNING**

**COLORADO NOTHERN ZONE - 83  
WELD\_BERNHARDT 8 PAD 4N67W1  
P\_BERNHARDT 31-1**

**P\_BERNHARDT 31-1**

**Plan: PLAN #1 11-04-09 RHS**

## **Standard Planning Report**

**04 November, 2009**





Azimuths to True North  
Magnetic North: 9.08°  
  
Magnetic Field  
Strength: 53283.2snT  
Dip Angle: 67.06°  
Date: 11/4/2009  
Model: IGRF200510

#### WELL DETAILS: P\_BERNHARDT 31-1

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.00	0.00	1369260.67	4825.00	3183593.15	40° 20' 42.540 N	104° 50' 28.788 W	

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2643.00	2782.12	PARKMAN TOP
4371.00	4651.81	SUSSEX TOP
4754.00	5066.22	SHANNON TOP
6965.00	7315.31	NIO A TOP
7288.00	7638.31	CODELL TOP
7738.00	8088.31	JSAND TOP

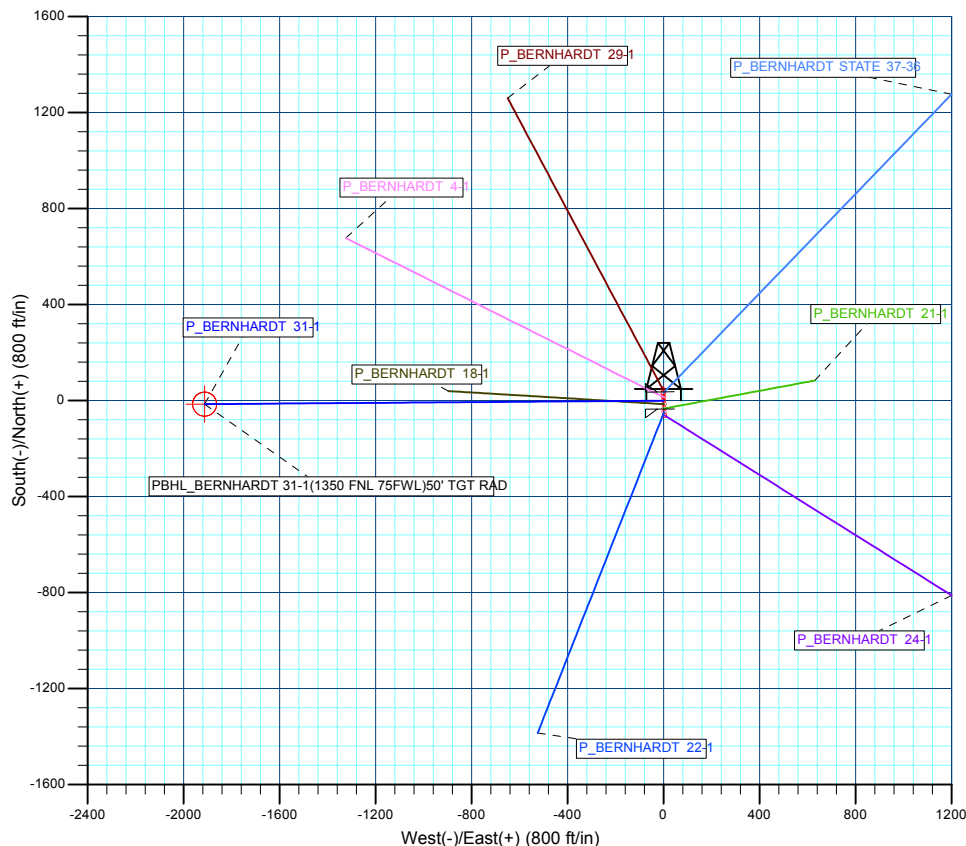
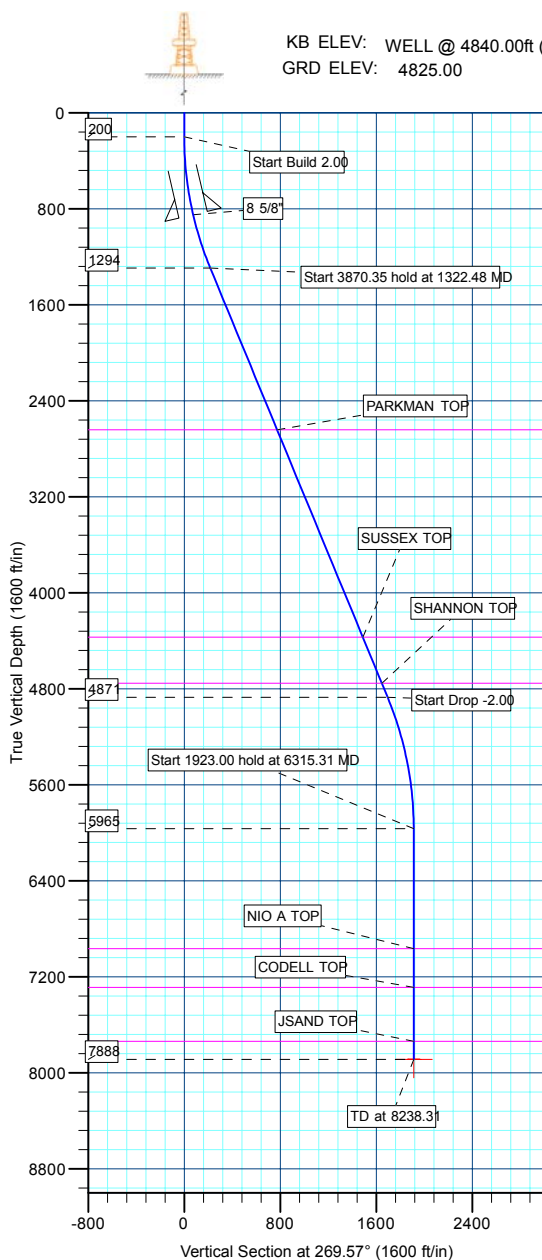
#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
1322.48	22.45	269.57	1293.98	-1.64	-217.10	2.00	269.57	217.11	
5192.83	22.45	269.57	4871.02	-12.84	-1695.03	0.00	0.00	1695.08	
6315.31	0.00	0.00	5965.00	-14.49	-1912.13	2.00	180.00	1912.19	
8238.31	0.00	0.00	7888.00	-14.49	-1912.13	0.00	0.00	1912.19	PBHL_BERNHARDT 31-1(1350 FNL 75FWL)

#### CASING DETAILS

TVD	MD	Name	Size
850.00	855.71	8 5/8"	8.62

KB ELEV: WELL @ 4840.00ft (Original Well Elev)  
GRD ELEV: 4825.00



#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7888.00	-14.49	-1912.13	1369231.99	3181681.18	40° 20' 42.396 N	104° 50' 53.484 W	Circle (Radius: 50.00)

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>North Reference:</b>	True
<b>Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_BERNHARDT 31-1		
<b>Design:</b>	PLAN #1 11-04-09 RHS		

<b>Project</b>	COLORADO NOTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	WELD_BERNHARDT 8 PAD 4N67W1, SECTION 1 T4N R67W			
<b>Site Position:</b>		<b>Northing:</b>	1,369,246.13 ft	<b>Latitude:</b> 40° 20' 42.396 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,183,596.05 ft	<b>Longitude:</b> 104° 50' 28.752 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	in	<b>Grid Convergence:</b> 0.43 °

<b>Well</b>	P_BERNHARDT 31-1			
<b>Well Position</b>	<b>+N/-S</b>	14.56 ft	<b>Northing:</b>	1,369,260.67 ft
	<b>+E/-W</b>	-2.79 ft	<b>Easting:</b>	3,183,593.15 ft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	4,825.00 ft

<b>Wellbore</b>	P_BERNHARDT 31-1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	11/4/2009	9.08	67.06	53,283

<b>Design</b>	PLAN #1 11-04-09 RHS			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	269.57

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,322.48	22.45	269.57	1,293.98	-1.64	-217.10	2.00	2.00	0.00	269.57	
5,192.83	22.45	269.57	4,871.02	-12.84	-1,695.03	0.00	0.00	0.00	0.00	
6,315.31	0.00	0.00	5,965.00	-14.49	-1,912.13	2.00	-2.00	0.00	180.00	
8,238.31	0.00	0.00	7,888.00	-14.49	-1,912.13	0.00	0.00	0.00	0.00	PBHL_BERNHARD

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>North Reference:</b>	True
<b>Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_BERNHARDT 31-1		
<b>Design:</b>	PLAN #1 11-04-09 RHS		

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
<b>Start Build 2.00</b>									
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	269.57	299.98	-0.01	-1.75	1.75	2.00	2.00	0.00
400.00	4.00	269.57	399.84	-0.05	-6.98	6.98	2.00	2.00	0.00
500.00	6.00	269.57	499.45	-0.12	-15.69	15.69	2.00	2.00	0.00
600.00	8.00	269.57	598.70	-0.21	-27.88	27.88	2.00	2.00	0.00
700.00	10.00	269.57	697.47	-0.33	-43.52	43.52	2.00	2.00	0.00
800.00	12.00	269.57	795.62	-0.47	-62.60	62.60	2.00	2.00	0.00
<b>8 5/8"</b>									
855.71	13.11	269.57	850.00	-0.57	-74.71	74.71	2.00	2.00	0.00
900.00	14.00	269.57	893.06	-0.64	-85.09	85.10	2.00	2.00	0.00
1,000.00	16.00	269.57	989.64	-0.84	-110.97	110.98	2.00	2.00	0.00
1,100.00	18.00	269.57	1,085.27	-1.06	-140.21	140.21	2.00	2.00	0.00
1,200.00	20.00	269.57	1,179.82	-1.31	-172.76	172.77	2.00	2.00	0.00
1,300.00	22.00	269.57	1,273.17	-1.58	-208.60	208.60	2.00	2.00	0.00
<b>Start 3870.35 hold at 1322.48 MD</b>									
1,322.48	22.45	269.57	1,293.98	-1.64	-217.10	217.11	2.00	2.00	0.00
1,400.00	22.45	269.57	1,365.62	-1.87	-246.70	246.71	0.00	0.00	0.00
1,500.00	22.45	269.57	1,458.05	-2.16	-284.89	284.90	0.00	0.00	0.00
1,600.00	22.45	269.57	1,550.47	-2.45	-323.07	323.08	0.00	0.00	0.00
1,700.00	22.45	269.57	1,642.89	-2.74	-361.26	361.27	0.00	0.00	0.00
1,800.00	22.45	269.57	1,735.31	-3.03	-399.45	399.46	0.00	0.00	0.00
1,900.00	22.45	269.57	1,827.73	-3.32	-437.63	437.64	0.00	0.00	0.00
2,000.00	22.45	269.57	1,920.15	-3.60	-475.82	475.83	0.00	0.00	0.00
2,100.00	22.45	269.57	2,012.57	-3.89	-514.00	514.02	0.00	0.00	0.00
2,200.00	22.45	269.57	2,105.00	-4.18	-552.19	552.20	0.00	0.00	0.00
2,300.00	22.45	269.57	2,197.42	-4.47	-590.38	590.39	0.00	0.00	0.00
2,400.00	22.45	269.57	2,289.84	-4.76	-628.56	628.58	0.00	0.00	0.00
2,500.00	22.45	269.57	2,382.26	-5.05	-666.75	666.77	0.00	0.00	0.00
2,600.00	22.45	269.57	2,474.68	-5.34	-704.93	704.95	0.00	0.00	0.00
2,700.00	22.45	269.57	2,567.10	-5.63	-743.12	743.14	0.00	0.00	0.00
<b>PARKMAN TOP</b>									
2,782.12	22.45	269.57	2,643.00	-5.87	-774.48	774.50	0.00	0.00	0.00
2,800.00	22.45	269.57	2,659.53	-5.92	-781.30	781.33	0.00	0.00	0.00
2,900.00	22.45	269.57	2,751.95	-6.21	-819.49	819.51	0.00	0.00	0.00
3,000.00	22.45	269.57	2,844.37	-6.50	-857.68	857.70	0.00	0.00	0.00
3,100.00	22.45	269.57	2,936.79	-6.79	-895.86	895.89	0.00	0.00	0.00
3,200.00	22.45	269.57	3,029.21	-7.08	-934.05	934.08	0.00	0.00	0.00
3,300.00	22.45	269.57	3,121.63	-7.37	-972.23	972.26	0.00	0.00	0.00
3,400.00	22.45	269.57	3,214.06	-7.65	-1,010.42	1,010.45	0.00	0.00	0.00
3,500.00	22.45	269.57	3,306.48	-7.94	-1,048.61	1,048.64	0.00	0.00	0.00
3,600.00	22.45	269.57	3,398.90	-8.23	-1,086.79	1,086.82	0.00	0.00	0.00
3,700.00	22.45	269.57	3,491.32	-8.52	-1,124.98	1,125.01	0.00	0.00	0.00
3,800.00	22.45	269.57	3,583.74	-8.81	-1,163.16	1,163.20	0.00	0.00	0.00
3,900.00	22.45	269.57	3,676.16	-9.10	-1,201.35	1,201.39	0.00	0.00	0.00
4,000.00	22.45	269.57	3,768.58	-9.39	-1,239.54	1,239.57	0.00	0.00	0.00
4,100.00	22.45	269.57	3,861.01	-9.68	-1,277.72	1,277.76	0.00	0.00	0.00
4,200.00	22.45	269.57	3,953.43	-9.97	-1,315.91	1,315.95	0.00	0.00	0.00
4,300.00	22.45	269.57	4,045.85	-10.26	-1,354.09	1,354.13	0.00	0.00	0.00
4,400.00	22.45	269.57	4,138.27	-10.55	-1,392.28	1,392.32	0.00	0.00	0.00
4,500.00	22.45	269.57	4,230.69	-10.84	-1,430.47	1,430.51	0.00	0.00	0.00
4,600.00	22.45	269.57	4,323.11	-11.13	-1,468.65	1,468.69	0.00	0.00	0.00
<b>SUSSEX TOP</b>									

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<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>North Reference:</b>	True
<b>Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_BERNHARDT 31-1		
<b>Design:</b>	PLAN #1 11-04-09 RHS		

**Planned Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,651.81	22.45	269.57	4,371.00	-11.28	-1,488.44	1,488.48	0.00	0.00	0.00
4,700.00	22.45	269.57	4,415.54	-11.42	-1,506.84	1,506.88	0.00	0.00	0.00
4,800.00	22.45	269.57	4,507.96	-11.70	-1,545.02	1,545.07	0.00	0.00	0.00
4,900.00	22.45	269.57	4,600.38	-11.99	-1,583.21	1,583.26	0.00	0.00	0.00
5,000.00	22.45	269.57	4,692.80	-12.28	-1,621.40	1,621.44	0.00	0.00	0.00
<b>SHANNON TOP</b>									
5,066.22	22.45	269.57	4,754.00	-12.47	-1,646.68	1,646.73	0.00	0.00	0.00
5,100.00	22.45	269.57	4,785.22	-12.57	-1,659.58	1,659.63	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,192.83	22.45	269.57	4,871.02	-12.84	-1,695.03	1,695.08	0.00	0.00	0.00
5,200.00	22.31	269.57	4,877.65	-12.86	-1,697.76	1,697.81	2.00	-2.00	0.00
5,300.00	20.31	269.57	4,970.81	-13.14	-1,734.09	1,734.14	2.00	-2.00	0.00
5,400.00	18.31	269.57	5,065.18	-13.39	-1,767.15	1,767.20	2.00	-2.00	0.00
5,500.00	16.31	269.57	5,160.65	-13.61	-1,796.90	1,796.95	2.00	-2.00	0.00
5,600.00	14.31	269.57	5,257.10	-13.81	-1,823.29	1,823.35	2.00	-2.00	0.00
5,700.00	12.31	269.57	5,354.41	-13.99	-1,846.31	1,846.36	2.00	-2.00	0.00
5,800.00	10.31	269.57	5,452.46	-14.14	-1,865.91	1,865.96	2.00	-2.00	0.00
5,900.00	8.31	269.57	5,551.14	-14.26	-1,882.08	1,882.13	2.00	-2.00	0.00
6,000.00	6.31	269.57	5,650.32	-14.35	-1,894.80	1,894.85	2.00	-2.00	0.00
6,100.00	4.31	269.57	5,749.89	-14.42	-1,904.04	1,904.10	2.00	-2.00	0.00
6,200.00	2.31	269.57	5,849.72	-14.47	-1,909.81	1,909.87	2.00	-2.00	0.00
6,300.00	0.31	269.57	5,949.69	-14.49	-1,912.09	1,912.15	2.00	-2.00	0.00
<b>Start 1923.00 hold at 6315.31 MD</b>									
6,315.31	0.00	0.00	5,965.00	-14.49	-1,912.13	1,912.19	2.00	-2.00	0.00
6,400.00	0.00	0.00	6,049.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
6,500.00	0.00	0.00	6,149.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
6,600.00	0.00	0.00	6,249.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
6,700.00	0.00	0.00	6,349.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
6,800.00	0.00	0.00	6,449.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
6,900.00	0.00	0.00	6,549.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,000.00	0.00	0.00	6,649.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,100.00	0.00	0.00	6,749.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,200.00	0.00	0.00	6,849.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,300.00	0.00	0.00	6,949.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
<b>NIO A TOP</b>									
7,315.31	0.00	0.00	6,965.00	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,400.00	0.00	0.00	7,049.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,500.00	0.00	0.00	7,149.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,600.00	0.00	0.00	7,249.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
<b>CODELL TOP</b>									
7,638.31	0.00	0.00	7,288.00	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,700.00	0.00	0.00	7,349.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,800.00	0.00	0.00	7,449.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
7,900.00	0.00	0.00	7,549.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
8,000.00	0.00	0.00	7,649.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
<b>JSAND TOP</b>									
8,088.31	0.00	0.00	7,738.00	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
8,100.00	0.00	0.00	7,749.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
8,200.00	0.00	0.00	7,849.69	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00
<b>PBHL_BERNHARDT 31-1(1350 FNL 75FWL)</b>									
8,238.31	0.00	0.00	7,888.00	-14.49	-1,912.13	1,912.19	0.00	0.00	0.00

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<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>North Reference:</b>	True
<b>Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_BERNHARDT 31-1		
<b>Design:</b>	PLAN #1 11-04-09 RHS		

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
PBHL_BERNHARDT	0.00	0.00	7,888.00	-14.49	-1,912.13	1,369,231.99	3,181,681.18	40° 20' 42.396 N	104° 50' 53.484 W
- plan hits target center									
- Circle (radius 50.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
855.71	850.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,782.12	2,643.00	PARKMAN TOP				
4,651.81	4,371.00	SUSSEX TOP				
5,066.22	4,754.00	SHANNON TOP				
7,315.31	6,965.00	NIO A TOP				
7,638.31	7,288.00	CODELL TOP				
8,088.31	7,738.00	JSAND TOP				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.00	200.00	0.00	0.00	Start Build 2.00	
1,322.48	1,293.98	-1.64	-217.10	Start 3870.35 hold at 1322.48 MD	
5,192.83	4,871.02	-12.84	-1,695.03	Start Drop -2.00	
6,315.31	5,965.00	-14.49	-1,912.13	Start 1923.00 hold at 6315.31 MD	
8,238.31	7,888.00	-14.49	-1,912.13	TD at 8238.31	



# **US ROCKIES REGION PLANNING**

**COLORADO NOTHERN ZONE - 83  
WELD\_BERNHARDT 8 PAD 4N67W1  
P\_BERNHARDT 31-1**

**P\_BERNHARDT 31-1  
PLAN #1 11-04-09 RHS**

## **Anticollision Report**

**04 November, 2009**



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #1 11-04-09 RHS		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	0.00 to 20,000.00ft	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	11/4/2009		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	8,238.31	PLAN #1 11-04-09 RHS (P_BERNHARDT	MWD	MWD - Standard

<b>Summary</b>						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_BERNHARDT 8 PAD 4N67W1						
P_BERNHARDT 18-1 - P_BERNHARDT 18-1 - PLAN #1	200.00	200.00	14.82	14.18	23.141	CC
P_BERNHARDT 18-1 - P_BERNHARDT 18-1 - PLAN #1	300.00	299.98	15.24	14.16	14.105	ES
P_BERNHARDT 18-1 - P_BERNHARDT 18-1 - PLAN #1	400.00	399.84	17.49	15.96	11.463	SF
P_BERNHARDT 21-1 - P_BERNHARDT 21-1 - PLAN #1	200.00	200.00	32.91	32.27	51.373	CC
P_BERNHARDT 21-1 - P_BERNHARDT 21-1 - PLAN #1	300.00	299.98	33.09	32.01	30.628	ES
P_BERNHARDT 21-1 - P_BERNHARDT 21-1 - PLAN #1	600.00	598.70	44.74	42.26	18.055	SF
P_BERNHARDT 22-1 - P_BERNHARDT 22-1 - PLAN #1	200.00	200.00	47.44	46.80	74.058	CC
P_BERNHARDT 22-1 - P_BERNHARDT 22-1 - PLAN #1	300.00	299.98	47.56	46.48	44.022	ES
P_BERNHARDT 22-1 - P_BERNHARDT 22-1 - PLAN #1	700.00	697.47	66.00	63.01	22.038	SF
P_BERNHARDT 24-1 - P_BERNHARDT 24-1 - PLAN #1	200.00	200.00	62.18	61.54	97.068	CC, ES
P_BERNHARDT 24-1 - P_BERNHARDT 24-1 - PLAN #1	600.00	587.98	94.69	92.26	38.989	SF
P_BERNHARDT 29-1 - P_BERNHARDT 29-1 - PLAN #1	317.94	317.91	47.38	46.22	40.826	CC
P_BERNHARDT 29-1 - P_BERNHARDT 29-1 - PLAN #1	400.00	399.84	47.60	46.07	31.153	ES
P_BERNHARDT 29-1 - P_BERNHARDT 29-1 - PLAN #1	700.00	697.47	62.72	59.74	21.104	SF
P_BERNHARDT 4-1 - P_BERNHARDT 4- - PLAN #1 11-	200.00	200.00	14.57	13.93	22.748	CC
P_BERNHARDT 4-1 - P_BERNHARDT 4- - PLAN #1 11-	300.00	299.98	14.69	13.61	13.601	ES
P_BERNHARDT 4-1 - P_BERNHARDT 4- - PLAN #1 11-	400.00	399.84	16.20	14.68	10.630	SF
P_BERNHARDT STATE 37-36 - P_BERNHARDT STATI	200.00	200.00	32.79	32.15	51.182	CC, ES
P_BERNHARDT STATE 37-36 - P_BERNHARDT STATI	500.00	494.84	51.32	49.34	25.971	SF

<b>Offset Design</b>												
WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 18-1 - P_BERNHARDT 18-1 - PLAN #1 11-04												
Survey Program: 0-MWD												
Reference												
Offset												
Semi Major Axis												
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	169.16	-14.56	2.79	14.82			
100.00	100.00	100.00	100.00	0.10	0.10	169.16	-14.56	2.79	14.82	14.63	0.19	77.591
200.00	200.00	200.00	200.00	0.32	0.32	169.16	-14.56	2.79	14.82	14.18	0.64	23.141 CC
300.00	299.98	299.98	299.98	0.53	0.55	-106.86	-14.56	2.79	15.24	14.16	1.08	14.105 ES
400.00	399.84	399.84	399.84	0.76	0.77	-123.45	-14.56	2.79	17.49	15.96	1.53	11.463 SF
500.00	499.45	499.45	499.45	1.01	0.99	-141.41	-14.56	2.79	23.45	21.47	1.98	11.852
600.00	598.70	598.70	598.70	1.30	1.22	-154.27	-14.56	2.79	33.86	31.43	2.43	13.942
700.00	697.47	697.47	697.47	1.64	1.44	-162.23	-14.56	2.79	48.45	45.57	2.88	16.850
800.00	795.62	795.62	795.62	2.03	1.66	-167.14	-14.56	2.79	66.89	63.57	3.32	20.138

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 18-1 - P_BERNHARDT 18-1 - PLAN #1 11-04												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
900.00	893.06	893.06	893.06	2.48	1.88	-170.29	-14.56	2.79	88.98	85.21	3.77	23.603	
1,000.00	989.64	991.29	991.29	2.99	2.09	-172.42	-14.54	2.49	114.30	110.08	4.22	27.084	
1,100.00	1,085.27	1,092.29	1,092.23	3.56	2.30	-173.92	-14.35	-0.74	140.27	135.61	4.67	30.062	
1,200.00	1,179.82	1,194.27	1,193.97	4.21	2.52	-175.04	-13.93	-7.60	166.25	161.12	5.12	32.442	
1,300.00	1,273.17	1,297.26	1,296.41	4.92	2.76	-175.94	-13.29	-18.19	192.17	186.58	5.60	34.336	
1,322.48	1,293.98	1,320.55	1,319.52	5.09	2.82	-176.12	-13.11	-21.10	197.99	192.28	5.71	34.701	
1,400.00	1,365.62	1,401.55	1,399.68	5.69	3.03	-176.70	-12.41	-32.66	216.99	210.86	6.13	35.421	
1,500.00	1,458.05	1,507.65	1,504.14	6.47	3.35	-177.33	-11.28	-51.22	238.35	231.66	6.68	35.657	
1,600.00	1,550.47	1,607.41	1,601.89	7.26	3.68	-177.84	-10.08	-71.06	257.32	250.08	7.24	35.535	
1,700.00	1,642.89	1,705.58	1,698.08	8.05	4.04	-178.27	-8.89	-90.65	276.24	268.44	7.80	35.407	
1,800.00	1,735.31	1,803.75	1,794.27	8.84	4.41	-178.64	-7.70	-110.25	295.19	286.82	8.37	35.271	
1,900.00	1,827.73	1,901.92	1,890.46	9.64	4.79	-178.97	-6.51	-129.84	314.14	305.20	8.94	35.132	
2,000.00	1,920.15	2,000.10	1,986.65	10.44	5.17	-179.27	-5.32	-149.43	333.10	323.58	9.52	34.994	
2,100.00	2,012.57	2,098.27	2,082.84	11.24	5.57	-179.53	-4.13	-169.02	352.07	341.97	10.10	34.860	
2,200.00	2,105.00	2,196.44	2,179.03	12.04	5.97	-179.76	-2.94	-188.61	371.04	360.36	10.68	34.731	
2,300.00	2,197.42	2,294.61	2,275.22	12.84	6.38	-179.97	-1.75	-208.20	390.02	378.75	11.27	34.607	
2,400.00	2,289.84	2,392.79	2,371.41	13.65	6.79	179.83	-0.56	-227.79	409.01	397.15	11.86	34.489	
2,500.00	2,382.26	2,490.96	2,467.60	14.45	7.21	179.66	0.63	-247.39	428.00	415.54	12.45	34.376	
2,600.00	2,474.68	2,589.13	2,563.79	15.26	7.62	179.50	1.82	-266.98	446.99	433.94	13.04	34.269	
2,700.00	2,567.10	2,687.30	2,659.98	16.06	8.04	179.35	3.01	-286.57	465.98	452.34	13.64	34.168	
2,800.00	2,659.53	2,785.48	2,756.18	16.87	8.46	179.22	4.20	-306.16	484.98	470.75	14.23	34.072	
2,900.00	2,751.95	2,883.65	2,852.37	17.68	8.89	179.09	5.39	-325.75	503.98	489.15	14.83	33.980	
3,000.00	2,844.37	2,981.82	2,948.56	18.48	9.31	178.97	6.58	-345.34	522.98	507.55	15.43	33.894	
3,100.00	2,936.79	3,079.99	3,044.75	19.29	9.74	178.87	7.77	-364.93	541.99	525.96	16.03	33.811	
3,200.00	3,029.21	3,178.17	3,140.94	20.10	10.16	178.77	8.96	-384.53	561.00	544.37	16.63	33.733	
3,300.00	3,121.63	3,276.34	3,237.13	20.90	10.59	178.67	10.14	-404.12	580.00	562.77	17.23	33.659	
3,400.00	3,214.06	3,374.51	3,333.32	21.71	11.02	178.58	11.33	-423.71	599.01	581.18	17.83	33.589	
3,500.00	3,306.48	3,472.68	3,429.51	22.52	11.45	178.50	12.52	-443.30	618.02	599.59	18.44	33.522	
3,600.00	3,398.90	3,570.86	3,525.70	23.33	11.88	178.42	13.71	-462.89	637.04	618.00	19.04	33.458	
3,700.00	3,491.32	3,669.03	3,621.89	24.14	12.31	178.35	14.90	-482.48	656.05	636.40	19.64	33.397	
3,800.00	3,583.74	3,767.20	3,718.08	24.94	12.74	178.28	16.09	-502.07	675.06	654.81	20.25	33.339	
3,900.00	3,676.16	3,865.37	3,814.27	25.75	13.17	178.21	17.28	-521.66	694.08	673.22	20.85	33.283	
4,000.00	3,768.58	3,963.55	3,910.46	26.56	13.61	178.15	18.47	-541.26	713.09	691.63	21.46	33.230	
4,100.00	3,861.01	4,061.72	4,006.65	27.37	14.04	178.09	19.66	-560.85	732.11	710.04	22.07	33.180	
4,200.00	3,953.43	4,159.89	4,102.84	28.18	14.47	178.04	20.85	-580.44	751.13	728.45	22.67	33.131	
4,300.00	4,045.85	4,258.06	4,199.03	28.99	14.90	177.99	22.04	-600.03	770.14	746.87	23.28	33.085	
4,400.00	4,138.27	4,356.24	4,295.22	29.80	15.34	177.93	23.23	-619.62	789.16	765.28	23.89	33.040	
4,500.00	4,230.69	4,454.41	4,391.41	30.60	15.77	177.89	24.42	-639.21	808.18	783.69	24.49	32.997	
4,600.00	4,323.11	4,552.58	4,487.60	31.41	16.20	177.84	25.61	-658.80	827.20	802.10	25.10	32.956	
4,700.00	4,415.54	4,650.75	4,583.79	32.22	16.64	177.80	26.80	-678.40	846.22	820.51	25.71	32.917	
4,800.00	4,507.96	4,748.93	4,679.99	33.03	17.07	177.76	27.99	-697.99	865.24	838.92	26.32	32.879	
4,900.00	4,600.38	4,847.10	4,776.18	33.84	17.51	177.72	29.18	-717.58	884.26	857.34	26.92	32.843	
5,000.00	4,692.80	4,945.27	4,872.37	34.65	17.94	177.68	30.37	-737.17	903.28	875.75	27.53	32.808	
5,100.00	4,785.22	5,043.44	4,968.56	35.46	18.38	177.64	31.55	-756.76	922.30	894.16	28.14	32.774	
5,192.83	4,871.02	5,134.58	5,057.85	36.21	18.78	177.61	32.66	-774.95	939.96	911.26	28.71	32.743	
5,200.00	4,877.65	5,141.62	5,064.75	36.26	18.81	177.61	32.74	-776.35	941.32	912.56	28.76	32.733	
5,300.00	4,970.81	5,240.15	5,161.29	36.87	19.25	177.58	33.94	-796.02	958.38	928.96	29.42	32.576	
5,400.00	5,065.18	5,339.21	5,258.35	37.42	19.69	177.55	35.14	-815.78	971.99	941.96	30.04	32.360	
5,500.00	5,160.65	5,438.68	5,355.81	37.92	20.13	177.50	36.34	-835.63	982.15	951.54	30.61	32.091	
5,600.00	5,257.10	5,538.28	5,453.92	38.36	20.43	177.46	37.27	-850.93	989.63	958.58	31.05	31.871	
5,700.00	5,354.41	5,600.00	5,514.51	38.75	20.67	177.43	38.09	-864.45	996.19	964.76	31.43	31.699	
5,800.00	5,452.46	5,666.65	5,580.50	39.09	20.84	177.41	38.66	-873.77	1,001.76	970.05	31.71	31.594	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 18-1 - P_BERNHARDT 18-1 - PLAN #1 11-04												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,900.00	5,551.14	5,740.73	5,654.08	39.37	21.02	177.39	39.18	-882.34	1,006.45	974.50	31.94	31.506	
6,000.00	5,650.32	5,814.77	5,727.81	39.61	21.17	177.37	39.58	-888.99	1,010.23	978.10	32.12	31.450	
6,100.00	5,749.89	5,900.00	5,812.88	39.79	21.32	177.36	39.90	-894.30	1,013.17	980.91	32.26	31.409	
6,200.00	5,849.72	5,962.73	5,875.57	39.92	21.41	177.36	40.04	-896.59	1,015.02	982.73	32.29	31.436	
6,300.00	5,949.69	6,036.86	5,949.69	40.01	21.51	177.35	40.10	-897.53	1,016.03	983.75	32.28	31.472	
6,315.31	5,965.00	6,052.17	5,965.00	40.02	21.52	86.92	40.10	-897.53	1,016.07	983.78	32.29	31.470	
6,400.00	6,049.69	6,136.86	6,049.69	40.08	21.63	86.92	40.10	-897.53	1,016.07	983.51	32.56	31.210	
6,500.00	6,149.69	6,236.86	6,149.69	40.15	21.76	86.92	40.10	-897.53	1,016.07	983.19	32.88	30.902	
6,600.00	6,249.69	6,336.86	6,249.69	40.22	21.89	86.92	40.10	-897.53	1,016.07	982.86	33.21	30.598	
6,700.00	6,349.69	6,436.86	6,349.69	40.30	22.03	86.92	40.10	-897.53	1,016.07	982.53	33.54	30.297	
6,800.00	6,449.69	6,536.86	6,449.69	40.37	22.17	86.92	40.10	-897.53	1,016.07	982.20	33.87	29.999	
6,900.00	6,549.69	6,636.86	6,549.69	40.45	22.30	86.92	40.10	-897.53	1,016.07	981.87	34.20	29.706	
7,000.00	6,649.69	6,736.86	6,649.69	40.52	22.44	86.92	40.10	-897.53	1,016.07	981.53	34.54	29.415	
7,100.00	6,749.69	6,836.86	6,749.69	40.60	22.58	86.92	40.10	-897.53	1,016.07	981.19	34.88	29.129	
7,200.00	6,849.69	6,936.86	6,849.69	40.68	22.72	86.92	40.10	-897.53	1,016.07	980.85	35.22	28.846	
7,300.00	6,949.69	7,036.86	6,949.69	40.76	22.87	86.92	40.10	-897.53	1,016.07	980.50	35.57	28.567	
7,400.00	7,049.69	7,136.86	7,049.69	40.84	23.01	86.92	40.10	-897.53	1,016.07	980.15	35.92	28.291	
7,500.00	7,149.69	7,236.86	7,149.69	40.93	23.16	86.92	40.10	-897.53	1,016.07	979.81	36.26	28.019	
7,600.00	7,249.69	7,336.86	7,249.69	41.01	23.30	86.92	40.10	-897.53	1,016.07	979.45	36.62	27.750	
7,700.00	7,349.69	7,436.86	7,349.69	41.10	23.45	86.92	40.10	-897.53	1,016.07	979.10	36.97	27.485	
7,800.00	7,449.69	7,536.86	7,449.69	41.18	23.60	86.92	40.10	-897.53	1,016.07	978.75	37.32	27.224	
7,900.00	7,549.69	7,636.86	7,549.69	41.27	23.75	86.92	40.10	-897.53	1,016.07	978.39	37.68	26.966	
8,000.00	7,649.69	7,736.86	7,649.69	41.36	23.90	86.92	40.10	-897.53	1,016.07	978.03	38.04	26.711	
8,100.00	7,749.69	7,836.86	7,749.69	41.44	24.05	86.92	40.10	-897.53	1,016.07	977.67	38.40	26.460	
8,200.00	7,849.69	7,936.86	7,849.69	41.53	24.21	86.92	40.10	-897.53	1,016.07	977.31	38.76	26.213	
8,216.39	7,866.07	7,953.25	7,866.07	41.55	24.23	86.92	40.10	-897.53	1,016.07	977.25	38.82	26.173	
8,238.31	7,888.00	7,959.17	7,872.00	41.57	24.24	86.92	40.10	-897.53	1,016.20	977.33	38.87	26.144	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	175.14	-32.79	2.79	32.91				
100.00	100.00	100.00	100.00	0.10	0.10	175.14	-32.79	2.79	32.91	32.72	0.19	172.251	
200.00	200.00	200.00	200.00	0.32	0.32	175.14	-32.79	2.79	32.91	32.27	0.64	51.373 CC	
300.00	299.98	299.98	299.98	0.53	0.55	-97.43	-32.79	2.79	33.09	32.01	1.08	30.628 ES	
400.00	399.84	399.84	399.84	0.76	0.77	-106.14	-32.79	2.79	34.16	32.63	1.53	22.341	
500.00	499.45	499.45	499.45	1.01	0.99	-118.93	-32.79	2.79	37.54	35.54	2.00	18.768	
600.00	598.70	598.70	598.70	1.30	1.22	-132.55	-32.79	2.79	44.74	42.26	2.48	18.055 SF	
700.00	697.47	697.47	697.47	1.64	1.44	-144.12	-32.79	2.79	56.55	53.60	2.95	19.184	
800.00	795.62	795.62	795.62	2.03	1.66	-152.75	-32.79	2.79	72.94	69.53	3.41	21.408	
900.00	893.06	893.06	893.06	2.48	1.88	-158.90	-32.79	2.79	93.58	89.72	3.86	24.243	
1,000.00	989.64	988.23	988.22	2.99	2.09	-163.26	-32.74	3.04	118.40	114.10	4.30	27.516	
1,100.00	1,085.27	1,079.10	1,079.06	3.56	2.28	-166.69	-32.26	5.65	149.28	144.56	4.72	31.628	
1,200.00	1,179.82	1,166.75	1,166.55	4.21	2.46	-169.41	-31.29	10.85	186.51	181.38	5.13	36.362	
1,300.00	1,273.17	1,250.76	1,250.21	4.92	2.66	-171.52	-29.91	18.29	229.80	224.26	5.54	41.475	
1,322.48	1,293.98	1,269.11	1,268.45	5.09	2.70	-171.93	-29.55	20.24	240.34	234.70	5.63	42.661	
1,400.00	1,365.62	1,331.27	1,330.15	5.69	2.85	-173.25	-28.16	27.69	277.93	271.93	5.99	46.368	
1,500.00	1,458.05	1,416.43	1,414.51	6.47	3.07	-174.68	-26.03	39.16	327.83	321.35	6.47	50.631	
1,600.00	1,550.47	1,502.82	1,500.08	7.26	3.31	-175.75	-23.86	50.81	377.87	370.91	6.97	54.244	
1,700.00	1,642.89	1,589.21	1,585.65	8.05	3.56	-176.57	-21.69	62.47	428.00	420.53	7.46	57.334	
1,800.00	1,735.31	1,675.60	1,671.22	8.84	3.81	-177.22	-19.53	74.13	478.17	470.20	7.97	60.003	
1,900.00	1,827.73	1,761.98	1,756.79	9.64	4.07	-177.74	-17.36	85.78	528.39	519.91	8.48	62.328	
2,000.00	1,920.15	1,848.37	1,842.36	10.44	4.33	-178.18	-15.19	97.44	578.63	569.64	8.99	64.368	
2,100.00	2,012.57	1,934.76	1,927.93	11.24	4.60	-178.54	-13.03	109.09	628.89	619.38	9.50	66.170	
2,200.00	2,105.00	2,021.15	2,013.50	12.04	4.87	-178.85	-10.86	120.75	679.17	669.14	10.02	67.772	
2,300.00	2,197.42	2,107.53	2,099.07	12.84	5.14	-179.12	-8.69	132.41	729.46	718.92	10.54	69.204	
2,400.00	2,289.84	2,193.92	2,184.64	13.65	5.42	-179.35	-6.52	144.06	779.76	768.69	11.06	70.492	
2,500.00	2,382.26	2,280.31	2,270.21	14.45	5.70	-179.56	-4.36	155.72	830.07	818.48	11.58	71.654	
2,600.00	2,474.68	2,366.69	2,355.78	15.26	5.98	-179.74	-2.19	167.38	880.38	868.27	12.11	72.709	
2,700.00	2,567.10	2,453.08	2,441.35	16.06	6.26	-179.90	-0.02	179.03	930.70	918.07	12.63	73.670	
2,800.00	2,659.53	2,539.47	2,526.92	16.87	6.54	179.95	2.14	190.69	981.03	967.87	13.16	74.549	
2,900.00	2,751.95	2,625.86	2,612.49	17.68	6.82	179.82	4.31	202.35	1,031.36	1,017.68	13.69	75.357	
3,000.00	2,844.37	2,712.24	2,698.06	18.48	7.11	179.70	6.48	214.00	1,081.70	1,067.48	14.21	76.100	
3,100.00	2,936.79	2,798.63	2,783.63	19.29	7.39	179.59	8.64	225.66	1,132.04	1,117.29	14.74	76.786	
3,200.00	3,029.21	2,885.02	2,869.20	20.10	7.68	179.49	10.81	237.32	1,182.38	1,167.11	15.27	77.422	
3,300.00	3,121.63	2,971.41	2,954.76	20.90	7.97	179.40	12.98	248.97	1,232.72	1,216.92	15.80	78.013	
3,400.00	3,214.06	3,057.79	3,040.33	21.71	8.25	179.32	15.15	260.63	1,283.07	1,266.74	16.33	78.563	
3,500.00	3,306.48	3,144.18	3,125.90	22.52	8.54	179.24	17.31	272.28	1,333.42	1,316.55	16.86	79.076	
3,600.00	3,398.90	3,230.57	3,211.47	23.33	8.83	179.17	19.48	283.94	1,383.77	1,366.37	17.39	79.556	
3,700.00	3,491.32	3,316.95	3,297.04	24.14	9.12	179.10	21.65	295.60	1,434.12	1,416.19	17.92	80.007	
3,800.00	3,583.74	3,403.34	3,382.61	24.94	9.41	179.04	23.81	307.25	1,484.47	1,466.01	18.46	80.429	
3,900.00	3,676.16	3,489.73	3,468.18	25.75	9.70	178.98	25.98	318.91	1,534.82	1,515.83	18.99	80.827	
4,000.00	3,768.58	3,576.12	3,553.75	26.56	9.99	178.93	28.15	330.57	1,585.18	1,565.66	19.52	81.202	
4,100.00	3,861.01	3,662.50	3,639.32	27.37	10.28	178.88	30.32	342.22	1,635.53	1,615.48	20.05	81.556	
4,200.00	3,953.43	3,748.89	3,724.89	28.18	10.57	178.83	32.48	353.88	1,685.89	1,665.30	20.59	81.890	
4,300.00	4,045.85	3,835.28	3,810.46	28.99	10.86	178.78	34.65	365.54	1,736.25	1,715.13	21.12	82.207	
4,400.00	4,138.27	3,921.67	3,896.03	29.80	11.15	178.74	36.82	377.19	1,786.60	1,764.95	21.65	82.508	
4,500.00	4,230.69	4,008.05	3,981.60	30.60	11.44	178.70	38.98	388.85	1,836.96	1,814.78	22.19	82.793	
4,600.00	4,323.11	4,094.44	4,067.17	31.41	11.73	178.66	41.15	400.50	1,887.32	1,864.60	22.72	83.064	
4,700.00	4,415.54	4,180.83	4,152.74	32.22	12.03	178.62	43.32	412.16	1,937.68	1,914.43	23.26	83.322	
4,800.00	4,507.96	4,267.21	4,238.31	33.03	12.32	178.59	45.49	423.82	1,988.04	1,964.25	23.79	83.568	
4,900.00	4,600.38	4,353.60	4,323.88	33.84	12.61	178.56	47.65	435.47	2,038.40	2,014.08	24.32	83.803	
5,000.00	4,692.80	4,439.99	4,409.45	34.65	12.90	178.53	49.82	447.13	2,088.77	2,063.91	24.86	84.027	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,785.22	4,526.38	4,495.02	35.46	13.19	178.50	51.99	458.79	2,139.13	2,113.74	25.39	84.242	
5,192.83	4,871.02	4,606.57	4,574.46	36.21	13.47	178.47	54.00	469.61	2,185.88	2,159.99	25.89	84.432	
5,200.00	4,877.65	4,612.77	4,580.60	36.26	13.49	178.47	54.15	470.44	2,189.48	2,163.54	25.94	84.407	
5,300.00	4,970.81	4,700.14	4,667.14	36.87	13.78	178.47	56.35	482.23	2,238.11	2,211.50	26.61	84.117	
5,400.00	5,065.18	4,789.15	4,755.31	37.42	14.08	178.47	58.58	494.24	2,283.66	2,256.42	27.24	83.841	
5,500.00	5,160.65	4,879.69	4,845.00	37.92	14.39	178.46	60.85	506.46	2,326.08	2,298.25	27.83	83.581	
5,600.00	5,257.10	4,971.66	4,936.09	38.36	14.70	178.45	63.16	518.87	2,365.31	2,336.93	28.38	83.338	
5,700.00	5,354.41	5,064.94	5,028.49	38.75	15.02	178.44	65.50	531.46	2,401.31	2,372.42	28.89	83.113	
5,800.00	5,452.46	5,159.42	5,122.08	39.09	15.34	178.42	67.87	544.20	2,434.04	2,404.68	29.36	82.906	
5,900.00	5,551.14	5,254.98	5,216.73	39.37	15.66	178.40	70.26	557.10	2,463.45	2,433.66	29.78	82.718	
6,000.00	5,650.32	5,351.51	5,312.34	39.61	15.99	178.38	72.69	570.12	2,489.50	2,459.35	30.16	82.551	
6,100.00	5,749.89	5,448.88	5,408.80	39.79	16.32	178.35	75.13	583.26	2,512.18	2,481.69	30.49	82.403	
6,200.00	5,849.72	5,546.99	5,506.97	39.92	16.66	178.32	77.59	596.50	2,531.45	2,500.68	30.77	82.277	
6,300.00	5,949.69	5,642.42	5,599.69	40.01	17.00	178.22	83.81	629.94	2,543.93	2,512.32	31.61	80.470	
6,315.31	5,965.00	6,007.73	5,965.00	40.02	17.63	87.79	83.81	629.94	2,543.97	2,512.34	31.64	80.409	
6,400.00	6,049.69	6,092.42	6,049.69	40.08	17.76	87.79	83.81	629.94	2,543.97	2,512.05	31.92	79.699	
6,500.00	6,149.69	6,192.42	6,149.69	40.15	17.92	87.79	83.81	629.94	2,543.97	2,511.72	32.26	78.869	
6,600.00	6,249.69	6,292.42	6,249.69	40.22	18.08	87.79	83.81	629.94	2,543.97	2,511.38	32.59	78.050	
6,700.00	6,349.69	6,392.42	6,349.69	40.30	18.25	87.79	83.81	629.94	2,543.97	2,511.04	32.94	77.242	
6,800.00	6,449.69	6,492.42	6,449.69	40.37	18.41	87.79	83.81	629.94	2,543.97	2,510.69	33.28	76.445	
6,900.00	6,549.69	6,592.42	6,549.69	40.45	18.57	87.79	83.81	629.94	2,543.97	2,510.35	33.62	75.660	
7,000.00	6,649.69	6,692.42	6,649.69	40.52	18.74	87.79	83.81	629.94	2,543.97	2,510.00	33.97	74.885	
7,100.00	6,749.69	6,792.42	6,749.69	40.60	18.91	87.79	83.81	629.94	2,543.97	2,509.65	34.32	74.121	
7,200.00	6,849.69	6,892.42	6,849.69	40.68	19.08	87.79	83.81	629.94	2,543.97	2,509.30	34.67	73.369	
7,300.00	6,949.69	6,992.42	6,949.69	40.76	19.25	87.79	83.81	629.94	2,543.97	2,508.95	35.03	72.627	
7,400.00	7,049.69	7,092.42	7,049.69	40.84	19.42	87.79	83.81	629.94	2,543.97	2,508.59	35.38	71.896	
7,500.00	7,149.69	7,192.42	7,149.69	40.93	19.59	87.79	83.81	629.94	2,543.97	2,508.23	35.74	71.175	
7,600.00	7,249.69	7,292.42	7,249.69	41.01	19.76	87.79	83.81	629.94	2,543.97	2,507.87	36.10	70.465	
7,700.00	7,349.69	7,392.42	7,349.69	41.10	19.94	87.79	83.81	629.94	2,543.97	2,507.51	36.46	69.766	
7,800.00	7,449.69	7,492.42	7,449.69	41.18	20.11	87.79	83.81	629.94	2,543.97	2,507.15	36.83	69.077	
7,900.00	7,549.69	7,592.42	7,549.69	41.27	20.29	87.79	83.81	629.94	2,543.97	2,506.78	37.19	68.398	
8,000.00	7,649.69	7,692.42	7,649.69	41.36	20.46	87.79	83.81	629.94	2,543.97	2,506.41	37.56	67.729	
8,100.00	7,749.69	7,792.42	7,749.69	41.44	20.64	87.79	83.81	629.94	2,543.97	2,506.04	37.93	67.071	
8,200.00	7,849.69	7,892.42	7,849.69	41.53	20.82	87.79	83.81	629.94	2,543.97	2,505.67	38.30	66.422	
8,238.31	7,888.00	7,930.73	7,888.00	41.57	20.89	87.79	83.81	629.94	2,543.97	2,505.53	38.44	66.176	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWMD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	176.63	-47.36	2.79	47.44				
100.00	100.00	100.00	100.00	0.10	0.10	176.63	-47.36	2.79	47.44	47.25	0.19	248.311	
200.00	200.00	200.00	200.00	0.32	0.32	176.63	-47.36	2.79	47.44	46.80	0.64	74.058 CC	
300.00	299.98	299.98	299.98	0.53	0.55	-95.03	-47.36	2.79	47.56	46.48	1.08	44.022 ES	
400.00	399.84	399.84	399.84	0.76	0.77	-101.20	-47.36	2.79	48.30	46.77	1.53	31.575	
500.00	499.45	499.45	499.45	1.01	0.99	-110.83	-47.36	2.79	50.73	48.72	2.01	25.293	
600.00	598.70	598.70	598.70	1.30	1.22	-122.35	-47.36	2.79	56.24	53.74	2.50	22.496	
700.00	697.47	697.47	697.47	1.64	1.44	-133.69	-47.36	2.79	66.00	63.01	2.99	22.038 SF	
800.00	795.62	795.62	795.62	2.03	1.66	-143.32	-47.36	2.79	80.46	76.98	3.48	23.142	
900.00	893.06	893.06	893.06	2.48	1.88	-150.84	-47.36	2.79	99.53	95.58	3.94	25.230	
1,000.00	989.64	989.62	989.62	2.99	2.08	-156.38	-47.61	2.69	122.91	118.51	4.40	27.965	
1,100.00	1,085.27	1,085.61	1,085.56	3.56	2.25	-159.49	-50.34	1.61	150.14	145.31	4.83	31.089	
1,200.00	1,179.82	1,181.05	1,180.80	4.21	2.43	-160.89	-56.02	-0.63	180.62	175.32	5.30	34.078	
1,300.00	1,273.17	1,275.74	1,275.04	4.92	2.62	-161.23	-64.57	-4.00	214.09	208.27	5.82	36.776	
1,322.48	1,293.98	1,296.91	1,296.06	5.09	2.67	-161.21	-66.88	-4.90	222.01	216.06	5.94	37.344	
1,400.00	1,365.62	1,369.85	1,368.35	5.69	2.84	-161.03	-75.93	-8.47	249.49	243.06	6.43	38.788	
1,500.00	1,458.05	1,463.96	1,461.21	6.47	3.09	-160.26	-90.14	-14.07	284.77	277.65	7.12	39.995	
1,600.00	1,550.47	1,557.91	1,553.36	7.26	3.38	-159.07	-107.14	-20.77	319.93	312.05	7.89	40.571	
1,700.00	1,642.89	1,651.50	1,644.51	8.05	3.71	-157.60	-126.87	-28.54	355.12	346.38	8.74	40.648	
1,800.00	1,735.31	1,744.53	1,734.38	8.84	4.10	-155.92	-149.21	-37.35	390.49	380.82	9.68	40.353	
1,900.00	1,827.73	1,836.81	1,822.72	9.64	4.53	-154.11	-174.04	-47.13	426.22	415.51	10.71	39.805	
2,000.00	1,920.15	1,928.17	1,909.27	10.44	5.01	-152.20	-201.22	-57.85	462.46	450.64	11.82	39.121	
2,100.00	2,012.57	2,019.97	1,995.74	11.24	5.53	-150.36	-229.92	-69.15	499.26	486.26	13.01	38.387	
2,200.00	2,105.00	2,111.81	2,082.24	12.04	6.08	-148.77	-258.64	-80.47	536.45	522.25	14.21	37.756	
2,300.00	2,197.42	2,203.65	2,168.74	12.84	6.64	-147.38	-287.35	-91.79	573.96	558.54	15.42	37.213	
2,400.00	2,289.84	2,295.49	2,255.24	13.65	7.21	-146.16	-316.06	-103.10	611.73	595.08	16.65	36.745	
2,500.00	2,382.26	2,387.34	2,341.74	14.45	7.79	-145.08	-344.78	-114.42	649.71	631.83	17.88	36.341	
2,600.00	2,474.68	2,479.18	2,428.24	15.26	8.37	-144.12	-373.49	-125.73	687.87	668.76	19.11	35.992	
2,700.00	2,567.10	2,571.02	2,514.74	16.06	8.96	-143.26	-402.21	-137.05	726.18	705.83	20.35	35.688	
2,800.00	2,659.53	2,662.86	2,601.24	16.87	9.56	-142.48	-430.92	-148.36	764.62	743.03	21.59	35.422	
2,900.00	2,751.95	2,754.70	2,687.74	17.68	10.15	-141.78	-459.64	-159.68	803.17	780.34	22.82	35.189	
3,000.00	2,844.37	2,846.55	2,774.24	18.48	10.76	-141.14	-488.35	-170.99	841.81	817.74	24.06	34.983	
3,100.00	2,936.79	2,938.39	2,860.74	19.29	11.36	-140.56	-517.07	-182.31	880.53	855.22	25.30	34.800	
3,200.00	3,029.21	3,030.23	2,947.24	20.10	11.97	-140.02	-545.78	-193.62	919.32	892.78	26.54	34.637	
3,300.00	3,121.63	3,122.07	3,033.74	20.90	12.57	-139.53	-574.49	-204.94	958.18	930.40	27.78	34.492	
3,400.00	3,214.06	3,213.91	3,120.24	21.71	13.18	-139.08	-603.21	-216.25	997.09	968.07	29.02	34.362	
3,500.00	3,306.48	3,305.76	3,206.74	22.52	13.79	-138.66	-631.92	-227.57	1,036.05	1,005.80	30.25	34.245	
3,600.00	3,398.90	3,397.60	3,293.25	23.33	14.41	-138.27	-660.64	-238.88	1,075.05	1,043.56	31.49	34.139	
3,700.00	3,491.32	3,489.44	3,379.75	24.14	15.02	-137.91	-689.35	-250.20	1,114.10	1,081.37	32.73	34.043	
3,800.00	3,583.74	3,581.28	3,466.25	24.94	15.63	-137.57	-718.07	-261.52	1,153.18	1,119.22	33.96	33.956	
3,900.00	3,676.16	3,673.12	3,552.75	25.75	16.25	-137.26	-746.78	-272.83	1,192.29	1,157.09	35.19	33.877	
4,000.00	3,768.58	3,764.96	3,639.25	26.56	16.86	-136.96	-775.50	-284.15	1,231.43	1,195.00	36.43	33.805	
4,100.00	3,861.01	3,856.81	3,725.75	27.37	17.48	-136.69	-804.21	-295.46	1,270.59	1,232.94	37.66	33.740	
4,200.00	3,953.43	3,948.65	3,812.25	28.18	18.10	-136.43	-832.92	-306.78	1,309.78	1,270.89	38.89	33.679	
4,300.00	4,045.85	4,040.49	3,898.75	28.99	18.72	-136.18	-861.64	-318.09	1,349.00	1,308.88	40.12	33.624	
4,400.00	4,138.27	4,132.33	3,985.25	29.80	19.33	-135.95	-890.35	-329.41	1,388.23	1,346.88	41.35	33.574	
4,500.00	4,230.69	4,224.17	4,071.75	30.60	19.95	-135.73	-919.07	-340.72	1,427.48	1,384.90	42.58	33.527	
4,600.00	4,323.11	4,316.02	4,158.25	31.41	20.57	-135.52	-947.78	-352.04	1,466.74	1,422.94	43.80	33.485	
4,700.00	4,415.54	4,407.86	4,244.75	32.22	21.19	-135.32	-976.50	-363.35	1,506.02	1,460.99	45.03	33.445	
4,800.00	4,507.96	4,499.70	4,331.25	33.03	21.81	-135.14	-1,005.21	-374.67	1,545.32	1,499.06	46.25	33.409	
4,900.00	4,600.38	4,591.54	4,417.75	33.84	22.43	-134.96	-1,033.93	-385.98	1,584.63	1,537.15	47.48	33.375	
5,000.00	4,692.80	4,683.38	4,504.25	34.65	23.05	-134.79	-1,062.64	-397.30	1,623.95	1,575.25	48.70	33.345	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 22-1 - P_BERNHARDT 22-1 - PLAN #1 11-04												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,785.22	4,775.22	4,590.76	35.46	23.67	-134.63	-1,091.35	-408.62	1,663.28	1,613.36	49.92	33.316	
5,192.83	4,871.02	4,860.49	4,671.06	36.21	24.25	-134.49	-1,118.01	-419.12	1,699.81	1,648.75	51.06	33.292	
5,200.00	4,877.65	4,867.07	4,677.26	36.26	24.29	-134.52	-1,120.07	-419.93	1,702.62	1,651.48	51.14	33.291	
5,300.00	4,970.81	4,959.37	4,764.20	36.87	24.91	-134.91	-1,148.93	-431.30	1,740.68	1,688.43	52.25	33.312	
5,400.00	5,065.18	5,052.41	4,851.82	37.42	25.54	-135.18	-1,178.02	-442.77	1,776.48	1,723.14	53.34	33.304	
5,500.00	5,160.65	5,146.06	4,940.02	37.92	26.18	-135.33	-1,207.30	-454.30	1,810.00	1,755.60	54.40	33.271	
5,600.00	5,257.10	5,247.61	5,035.73	38.36	26.83	-135.36	-1,238.90	-466.76	1,841.20	1,785.75	55.45	33.205	
5,700.00	5,354.41	5,373.17	5,155.30	38.75	27.44	-135.26	-1,274.52	-480.80	1,869.01	1,812.59	56.43	33.122	
5,800.00	5,452.46	5,501.55	5,279.16	39.09	27.95	-135.17	-1,305.87	-493.15	1,892.90	1,835.64	57.26	33.057	
5,900.00	5,551.14	5,632.40	5,406.84	39.37	28.40	-135.10	-1,332.48	-503.63	1,912.76	1,854.78	57.98	32.989	
6,000.00	5,650.32	5,765.33	5,537.74	39.61	28.79	-135.04	-1,353.92	-512.08	1,928.47	1,869.89	58.59	32.917	
6,100.00	5,749.89	5,899.87	5,671.18	39.79	29.12	-134.99	-1,369.85	-518.36	1,939.97	1,880.90	59.07	32.840	
6,200.00	5,849.72	6,035.56	5,806.41	39.92	29.36	-134.96	-1,380.00	-522.36	1,947.20	1,887.77	59.43	32.767	
6,300.00	5,949.69	6,171.88	5,942.64	40.01	29.53	-134.95	-1,384.18	-524.01	1,950.10	1,890.44	59.66	32.686	
6,315.31	5,965.00	6,192.78	5,963.54	40.02	29.55	134.62	-1,384.29	-524.05	1,950.16	1,890.47	59.69	32.672	
6,400.00	6,049.69	6,278.92	6,049.69	40.08	29.62	134.62	-1,384.30	-524.05	1,950.16	1,890.33	59.83	32.593	
6,500.00	6,149.69	6,378.92	6,149.69	40.15	29.70	134.62	-1,384.30	-524.05	1,950.16	1,890.16	60.01	32.500	
6,600.00	6,249.69	6,478.92	6,249.69	40.22	29.78	134.62	-1,384.30	-524.05	1,950.16	1,889.99	60.18	32.406	
6,700.00	6,349.69	6,578.92	6,349.69	40.30	29.86	134.62	-1,384.30	-524.05	1,950.16	1,889.81	60.36	32.311	
6,800.00	6,449.69	6,678.92	6,449.69	40.37	29.95	134.62	-1,384.30	-524.05	1,950.16	1,889.63	60.54	32.214	
6,900.00	6,549.69	6,778.92	6,549.69	40.45	30.03	134.62	-1,384.30	-524.05	1,950.16	1,889.44	60.72	32.117	
7,000.00	6,649.69	6,878.92	6,649.69	40.52	30.12	134.62	-1,384.30	-524.05	1,950.16	1,889.26	60.91	32.019	
7,100.00	6,749.69	6,978.92	6,749.69	40.60	30.21	134.62	-1,384.30	-524.05	1,950.16	1,889.07	61.09	31.921	
7,200.00	6,849.69	7,078.92	6,849.69	40.68	30.30	134.62	-1,384.30	-524.05	1,950.16	1,888.88	61.29	31.821	
7,300.00	6,949.69	7,178.92	6,949.69	40.76	30.39	134.62	-1,384.30	-524.05	1,950.16	1,888.69	61.48	31.720	
7,400.00	7,049.69	7,278.92	7,049.69	40.84	30.48	134.62	-1,384.30	-524.05	1,950.16	1,888.49	61.68	31.619	
7,500.00	7,149.69	7,378.92	7,149.69	40.93	30.58	134.62	-1,384.30	-524.05	1,950.16	1,888.29	61.88	31.517	
7,600.00	7,249.69	7,478.92	7,249.69	41.01	30.67	134.62	-1,384.30	-524.05	1,950.16	1,888.09	62.08	31.415	
7,700.00	7,349.69	7,578.92	7,349.69	41.10	30.77	134.62	-1,384.30	-524.05	1,950.16	1,887.88	62.28	31.312	
7,800.00	7,449.69	7,678.92	7,449.69	41.18	30.87	134.62	-1,384.30	-524.05	1,950.16	1,887.67	62.49	31.208	
7,900.00	7,549.69	7,778.92	7,549.69	41.27	30.97	134.62	-1,384.30	-524.05	1,950.16	1,887.47	62.70	31.103	
8,000.00	7,649.69	7,878.92	7,649.69	41.36	31.07	134.62	-1,384.30	-524.05	1,950.16	1,887.25	62.91	30.998	
8,100.00	7,749.69	7,978.92	7,749.69	41.44	31.17	134.62	-1,384.30	-524.05	1,950.16	1,887.04	63.13	30.893	
8,200.00	7,849.69	8,078.92	7,849.69	41.53	31.27	134.62	-1,384.30	-524.05	1,950.16	1,886.82	63.34	30.787	
8,238.31	7,888.00	8,117.23	7,888.00	41.57	31.31	134.62	-1,384.30	-524.05	1,950.16	1,886.74	63.43	30.746	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 24-1 - P_BERNHARDT 24-1 - PLAN #1 11-04													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	174.86	-61.93	5.57	62.18				
100.00	100.00	100.00	100.00	0.10	0.10	174.86	-61.93	5.57	62.18	61.99	0.19	325.464	
200.00	200.00	200.00	200.00	0.32	0.32	174.86	-61.93	5.57	62.18	61.54	0.64	97.068 CC, ES	
300.00	299.98	298.59	298.58	0.53	0.53	-97.45	-62.83	7.01	63.44	62.38	1.06	59.841	
400.00	399.84	396.54	396.39	0.76	0.74	-104.92	-65.51	11.28	68.04	66.56	1.49	45.709	
500.00	499.45	493.20	492.69	1.01	0.98	-114.93	-69.89	18.28	77.90	75.95	1.95	39.942	
600.00	598.70	587.98	586.80	1.30	1.25	-124.82	-75.86	27.80	94.69	92.26	2.43	38.989 SF	
700.00	697.47	680.33	678.09	1.64	1.55	-132.98	-83.27	39.61	119.02	116.11	2.91	40.869	
800.00	795.62	769.77	766.02	2.03	1.89	-139.12	-91.93	53.42	150.67	147.27	3.40	44.310	
900.00	893.06	855.86	850.15	2.48	2.26	-143.55	-101.64	68.91	189.09	185.20	3.90	48.533	
1,000.00	989.64	938.27	930.13	2.99	2.66	-146.71	-112.18	85.73	233.73	229.33	4.40	53.089	
1,100.00	1,085.27	1,016.72	1,005.70	3.56	3.07	-148.97	-123.35	103.55	284.08	279.16	4.92	57.719	
1,200.00	1,179.82	1,091.01	1,076.71	4.21	3.50	-150.57	-134.94	122.03	339.69	334.23	5.46	62.258	
1,300.00	1,273.17	1,160.99	1,143.07	4.92	3.95	-151.68	-146.75	140.86	400.15	394.14	6.01	66.594	
1,322.48	1,293.98	1,176.12	1,157.34	5.09	4.05	-151.87	-149.41	145.11	414.37	408.24	6.13	67.542	
1,400.00	1,365.62	1,227.17	1,205.30	5.69	4.40	-152.97	-158.70	159.93	464.38	457.79	6.59	70.436	
1,500.00	1,458.05	1,290.85	1,264.68	6.47	4.85	-154.05	-170.92	179.42	530.52	523.34	7.19	73.835	
1,600.00	1,550.47	1,352.16	1,321.35	7.26	5.33	-154.86	-183.35	199.24	598.36	590.58	7.78	76.893	
1,700.00	1,642.89	1,411.18	1,375.42	8.05	5.80	-155.48	-195.92	219.29	667.75	659.37	8.38	79.710	
1,800.00	1,735.31	1,472.57	1,431.17	8.84	6.32	-155.98	-209.57	241.06	738.52	729.54	8.98	82.202	
1,900.00	1,827.73	1,542.73	1,494.76	9.64	6.93	-156.46	-225.32	266.18	809.63	800.02	9.61	84.216	
2,000.00	1,920.15	1,612.89	1,558.35	10.44	7.54	-156.86	-241.07	291.30	880.77	870.52	10.25	85.962	
2,100.00	2,012.57	1,683.05	1,621.94	11.24	8.15	-157.20	-256.82	316.42	951.92	941.04	10.88	87.475	
2,200.00	2,105.00	1,753.21	1,685.53	12.04	8.77	-157.49	-272.56	341.53	1,023.09	1,011.57	11.52	88.800	
2,300.00	2,197.42	1,823.37	1,749.12	12.84	9.38	-157.74	-288.31	366.65	1,094.27	1,082.11	12.16	89.975	
2,400.00	2,289.84	1,893.53	1,812.71	13.65	10.00	-157.97	-304.06	391.77	1,165.46	1,152.66	12.80	91.019	
2,500.00	2,382.26	1,963.70	1,876.30	14.45	10.62	-158.17	-319.80	416.88	1,236.66	1,223.21	13.45	91.953	
2,600.00	2,474.68	2,033.86	1,939.89	15.26	11.24	-158.34	-335.55	442.00	1,307.86	1,293.77	14.09	92.797	
2,700.00	2,567.10	2,104.02	2,003.48	16.06	11.87	-158.50	-351.30	467.12	1,379.07	1,364.33	14.74	93.562	
2,800.00	2,659.53	2,174.18	2,067.07	16.87	12.49	-158.64	-367.05	492.23	1,450.28	1,434.90	15.39	94.258	
2,900.00	2,751.95	2,244.34	2,130.66	17.68	13.11	-158.77	-382.79	517.35	1,521.50	1,505.47	16.03	94.896	
3,000.00	2,844.37	2,314.50	2,194.25	18.48	13.74	-158.89	-398.54	542.47	1,592.72	1,576.04	16.68	95.483	
3,100.00	2,936.79	2,384.66	2,257.84	19.29	14.36	-159.00	-414.29	567.59	1,663.95	1,646.62	17.33	96.025	
3,200.00	3,029.21	2,454.82	2,321.43	20.10	14.99	-159.10	-430.04	592.70	1,735.17	1,717.20	17.98	96.528	
3,300.00	3,121.63	2,524.98	2,385.02	20.90	15.61	-159.19	-445.78	617.82	1,806.40	1,787.78	18.62	96.996	
3,400.00	3,214.06	2,595.14	2,448.61	21.71	16.24	-159.27	-461.53	642.94	1,877.63	1,858.36	19.27	97.434	
3,500.00	3,306.48	2,665.30	2,512.20	22.52	16.87	-159.35	-477.28	668.05	1,948.87	1,928.95	19.92	97.844	
3,600.00	3,398.90	2,735.46	2,575.79	23.33	17.49	-159.42	-493.03	693.17	2,020.10	1,999.54	20.57	98.229	
3,700.00	3,491.32	2,805.62	2,639.38	24.14	18.12	-159.49	-508.77	718.29	2,091.34	2,070.12	21.21	98.592	
3,800.00	3,583.74	2,875.78	2,702.97	24.94	18.75	-159.55	-524.52	743.40	2,162.57	2,140.72	21.86	98.936	
3,900.00	3,676.16	2,945.94	2,766.56	25.75	19.38	-159.61	-540.27	768.52	2,233.81	2,211.31	22.50	99.262	
4,000.00	3,768.58	3,016.10	2,830.15	26.56	20.00	-159.67	-556.02	793.64	2,305.05	2,281.90	23.15	99.571	
4,100.00	3,861.01	3,086.26	2,893.74	27.37	20.63	-159.72	-571.76	818.76	2,376.29	2,352.50	23.79	99.865	
4,200.00	3,953.43	3,156.43	2,957.33	28.18	21.26	-159.77	-587.51	843.87	2,447.54	2,423.10	24.44	100.147	
4,300.00	4,045.85	3,226.59	3,020.91	28.99	21.89	-159.82	-603.26	868.99	2,518.78	2,493.69	25.08	100.415	
4,400.00	4,138.27	3,296.75	3,084.50	29.80	22.51	-159.86	-619.01	894.11	2,590.02	2,564.29	25.73	100.672	
4,500.00	4,230.69	3,366.91	3,148.09	30.60	23.14	-159.90	-634.75	919.22	2,661.27	2,634.90	26.37	100.920	
4,600.00	4,323.11	3,437.07	3,211.68	31.41	23.77	-159.94	-650.50	944.34	2,732.51	2,705.50	27.01	101.158	
4,700.00	4,415.54	3,507.23	3,275.27	32.22	24.40	-159.98	-666.25	969.46	2,803.76	2,776.10	27.65	101.386	
4,800.00	4,507.96	3,577.39	3,338.86	33.03	25.03	-160.01	-682.00	994.57	2,875.00	2,846.71	28.30	101.607	
4,900.00	4,600.38	3,647.55	3,402.45	33.84	25.66	-160.05	-697.74	1,019.69	2,946.25	2,917.31	28.94	101.820	
5,000.00	4,692.80	3,717.71	3,466.04	34.65	26.29	-160.08	-713.49	1,044.81	3,017.49	2,987.92	29.58	102.026	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	4,785.22	3,787.87	3,529.63	35.46	26.91	-160.11	-729.24	1,069.93	3,088.74	3,058.53	30.21	102.226	
5,192.83	4,871.02	3,853.00	3,588.67	36.21	27.50	-160.14	-743.86	1,093.24	3,154.88	3,124.08	30.81	102.406	
5,200.00	4,877.65	3,858.04	3,593.23	36.26	27.54	-160.19	-744.99	1,095.04	3,159.98	3,129.12	30.86	102.384	
5,300.00	4,970.81	3,929.53	3,658.02	36.87	28.18	-160.85	-761.03	1,120.64	3,229.90	3,198.29	31.61	102.186	
5,400.00	5,065.18	4,003.28	3,724.87	37.42	28.85	-161.43	-777.59	1,147.04	3,297.41	3,265.08	32.34	101.970	
5,500.00	5,160.65	4,079.21	3,793.69	37.92	29.53	-161.93	-794.63	1,174.22	3,362.46	3,329.41	33.04	101.756	
5,600.00	5,257.10	4,157.22	3,864.39	38.36	30.23	-162.35	-812.14	1,202.15	3,424.95	3,391.22	33.73	101.555	
5,700.00	5,354.41	4,237.22	3,936.90	38.75	30.94	-162.72	-830.09	1,230.79	3,484.81	3,450.43	34.38	101.376	
5,800.00	5,452.46	4,319.11	4,011.12	39.09	31.68	-163.03	-848.47	1,260.10	3,541.97	3,506.92	35.05	101.042	
5,900.00	5,551.14	4,402.78	4,086.96	39.37	32.43	-163.29	-867.25	1,290.06	3,596.37	3,560.65	35.73	100.668	
6,000.00	5,650.32	4,488.15	4,164.32	39.61	33.19	-163.50	-886.41	1,320.62	3,647.95	3,611.60	36.36	100.337	
6,100.00	5,749.89	4,575.09	4,243.13	39.79	33.97	-163.67	-905.93	1,351.74	3,696.66	3,659.71	36.95	100.051	
6,200.00	5,849.72	4,663.52	4,323.27	39.92	34.77	-163.80	-925.77	1,383.40	3,742.43	3,704.93	37.49	99.813	
6,300.00	5,949.69	4,753.31	4,404.66	40.01	35.57	-163.89	-945.93	1,415.55	3,785.22	3,747.22	38.00	99.623	
6,315.31	5,965.00	4,767.18	4,417.22	40.02	35.70	-105.66	-949.04	1,420.51	3,791.50	3,753.44	38.07	99.596	
6,400.00	6,049.69	4,843.93	4,486.79	40.08	36.39	-105.82	-966.27	1,447.99	3,826.09	3,787.60	38.49	99.407	
6,500.00	6,149.69	4,934.57	4,568.94	40.15	37.20	-105.99	-986.61	1,480.43	3,866.95	3,827.96	38.98	99.191	
6,600.00	6,249.69	5,025.20	4,651.08	40.22	38.01	-106.16	-1,006.95	1,512.88	3,907.84	3,868.36	39.48	98.982	
6,700.00	6,349.69	5,115.84	4,733.23	40.30	38.83	-106.33	-1,027.30	1,545.33	3,948.76	3,908.79	39.98	98.780	
6,800.00	6,449.69	5,206.47	4,815.38	40.37	39.64	-106.49	-1,047.64	1,577.77	3,989.71	3,949.24	40.47	98.585	
6,900.00	6,549.69	5,297.10	4,897.52	40.45	40.45	-106.65	-1,067.98	1,610.22	4,030.69	3,989.73	40.96	98.397	
7,000.00	6,649.69	5,387.74	4,979.67	40.52	41.27	-106.81	-1,088.33	1,642.67	4,071.69	4,030.24	41.46	98.215	
7,100.00	6,749.69	5,478.37	5,061.82	40.60	42.08	-106.96	-1,108.67	1,675.11	4,112.72	4,070.77	41.95	98.039	
7,200.00	6,849.69	5,568.99	5,144.00	40.68	42.89	-107.11	-1,129.00	1,707.54	4,153.75	4,111.80	42.44	97.864	
7,300.00	6,949.69	5,659.61	5,226.17	40.76	43.70	-107.26	-1,149.33	1,739.96	4,194.77	4,152.82	42.93	97.689	
7,400.00	7,049.69	5,750.23	5,307.35	40.84	44.51	-107.41	-1,169.66	1,772.38	4,235.79	4,193.85	43.42	97.514	
7,500.00	7,149.69	5,840.85	5,387.53	40.93	45.32	-107.56	-1,189.99	1,804.80	4,276.81	4,234.87	43.91	97.339	
7,600.00	7,249.69	5,931.47	5,467.71	41.01	46.13	-107.71	-1,210.32	1,837.22	4,317.83	4,275.89	44.40	97.164	
7,700.00	7,349.69	6,022.09	5,547.89	41.10	46.94	-107.86	-1,230.65	1,869.64	4,358.85	4,316.91	44.89	96.989	
7,800.00	7,449.69	6,112.71	5,628.07	41.18	47.75	-108.01	-1,250.98	1,902.06	4,399.87	4,357.93	45.38	96.814	
7,900.00	7,549.69	6,203.33	5,708.25	41.27	48.56	-108.16	-1,271.31	1,934.48	4,440.89	4,398.95	45.87	96.639	
8,000.00	7,649.69	6,293.95	5,788.43	41.36	49.37	-108.31	-1,291.64	1,966.90	4,481.91	4,439.97	46.36	96.464	
8,100.00	7,749.69	6,384.57	5,868.61	41.44	50.18	-108.46	-1,311.97	1,999.32	4,522.93	4,479.99	46.85	96.289	
8,200.00	7,849.69	6,475.19	5,948.79	41.53	50.99	-108.61	-1,332.30	2,031.74	4,563.95	4,519.99	47.34	96.114	
8,225.36	7,875.05	6,500.00	5,973.60	41.56	51.20	-108.66	-1,337.00	2,036.44	4,568.69	4,524.73	47.39	96.089	
8,238.31	7,888.00	6,509.92	5,983.52	41.57	51.26	-108.67	-1,338.00	2,037.44	4,569.69	4,525.73	47.40	96.084	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-3.37	47.36	-2.79	47.44				
100.00	100.00	100.00	100.00	0.10	0.10	-3.37	47.36	-2.79	47.44	47.25	0.19	248.311	
200.00	200.00	200.00	200.00	0.32	0.32	-3.37	47.36	-2.79	47.44	46.80	0.64	74.058	
300.00	299.98	299.98	299.98	0.53	0.55	89.17	47.36	-2.79	47.38	46.30	1.08	43.870	
317.94	317.91	317.91	317.91	0.58	0.59	90.00	47.36	-2.79	47.38	46.22	1.16	40.826 CC	
400.00	399.84	399.84	399.84	0.76	0.77	95.47	47.36	-2.79	47.60	46.07	1.53	31.153 ES	
500.00	499.45	499.45	499.45	1.01	0.99	105.56	47.36	-2.79	49.20	47.20	2.00	24.605	
600.00	598.70	598.70	598.70	1.30	1.22	118.01	47.36	-2.79	53.78	51.29	2.49	21.623	
700.00	697.47	697.47	697.47	1.64	1.44	130.50	47.36	-2.79	62.72	59.74	2.97	21.104 SF	
800.00	795.62	795.62	795.62	2.03	1.66	141.17	47.36	-2.79	76.59	73.15	3.44	22.259	
900.00	893.06	893.06	893.06	2.48	1.88	149.43	47.36	-2.79	95.28	91.39	3.90	24.454	
1,000.00	989.64	989.76	989.75	2.99	2.09	155.45	47.60	-2.92	118.42	114.07	4.35	27.244	
1,100.00	1,085.27	1,086.21	1,086.16	3.56	2.31	158.85	50.22	-4.31	145.25	140.44	4.81	30.193	
1,200.00	1,179.82	1,182.31	1,182.06	4.21	2.53	160.43	55.67	-7.22	175.09	169.79	5.30	33.024	
1,300.00	1,273.17	1,277.89	1,277.18	4.92	2.75	160.88	63.90	-11.60	207.63	201.80	5.83	35.621	
1,322.48	1,293.98	1,299.29	1,298.43	5.09	2.80	160.88	66.13	-12.79	215.30	209.35	5.95	36.172	
1,400.00	1,365.62	1,373.13	1,371.59	5.69	3.00	160.74	74.88	-17.46	241.82	235.39	6.44	37.577	
1,500.00	1,458.05	1,468.59	1,465.77	6.47	3.27	159.99	88.67	-24.81	275.59	268.48	7.11	38.758	
1,600.00	1,550.47	1,564.12	1,559.42	7.26	3.57	158.78	105.22	-33.63	308.95	301.09	7.86	39.327	
1,700.00	1,642.89	1,659.48	1,652.25	8.05	3.92	157.26	124.49	-43.90	342.04	333.36	8.68	39.396	
1,800.00	1,735.31	1,754.47	1,743.94	8.84	4.31	155.50	146.38	-55.57	375.03	365.43	9.60	39.076	
1,900.00	1,827.73	1,848.88	1,834.21	9.64	4.75	153.58	170.79	-68.58	408.11	397.50	10.60	38.486	
2,000.00	1,920.15	1,942.35	1,922.86	10.44	5.24	151.64	196.89	-82.49	441.49	429.80	11.69	37.767	
2,100.00	2,012.57	2,035.60	2,011.28	11.24	5.75	149.96	223.05	-96.44	475.25	462.45	12.81	37.110	
2,200.00	2,105.00	2,128.86	2,099.70	12.04	6.27	148.50	249.21	-110.38	509.34	495.40	13.94	36.527	
2,300.00	2,197.42	2,222.11	2,188.12	12.84	6.81	147.22	275.38	-124.33	543.69	528.59	15.10	36.012	
2,400.00	2,289.84	2,315.37	2,276.54	13.65	7.36	146.09	301.54	-138.27	578.25	561.99	16.26	35.560	
2,500.00	2,382.26	2,408.63	2,364.96	14.45	7.91	145.09	327.70	-152.22	612.99	595.56	17.43	35.161	
2,600.00	2,474.68	2,501.88	2,453.37	15.26	8.48	144.20	353.86	-166.16	647.88	629.27	18.61	34.809	
2,700.00	2,567.10	2,595.14	2,541.79	16.06	9.04	143.39	380.02	-180.11	682.90	663.10	19.80	34.496	
2,800.00	2,659.53	2,688.40	2,630.21	16.87	9.61	142.66	406.18	-194.05	718.02	697.03	20.98	34.218	
2,900.00	2,751.95	2,781.65	2,718.63	17.68	10.19	142.01	432.34	-208.00	753.23	731.06	22.17	33.969	
3,000.00	2,844.37	2,874.91	2,807.05	18.48	10.77	141.40	458.50	-221.94	788.53	765.16	23.37	33.746	
3,100.00	2,936.79	2,968.16	2,895.47	19.29	11.35	140.86	484.66	-235.89	823.89	799.33	24.56	33.546	
3,200.00	3,029.21	3,061.42	2,983.89	20.10	11.93	140.35	510.83	-249.83	859.32	833.56	25.76	33.364	
3,300.00	3,121.63	3,154.68	3,072.31	20.90	12.51	139.89	536.99	-263.78	894.80	867.85	26.95	33.199	
3,400.00	3,214.06	3,247.93	3,160.72	21.71	13.10	139.46	563.15	-277.72	930.33	902.18	28.15	33.049	
3,500.00	3,306.48	3,341.19	3,249.14	22.52	13.69	139.06	589.31	-291.67	965.90	936.55	29.35	32.912	
3,600.00	3,398.90	3,434.44	3,337.56	23.33	14.28	138.69	615.47	-305.61	1,001.51	970.96	30.55	32.786	
3,700.00	3,491.32	3,527.70	3,425.98	24.14	14.87	138.34	641.63	-319.56	1,037.15	1,005.40	31.75	32.670	
3,800.00	3,583.74	3,620.96	3,514.40	24.94	15.46	138.02	667.79	-333.50	1,072.82	1,039.88	32.95	32.564	
3,900.00	3,676.16	3,714.21	3,602.82	25.75	16.05	137.72	693.95	-347.45	1,108.52	1,074.38	34.15	32.465	
4,000.00	3,768.58	3,807.47	3,691.24	26.56	16.64	137.44	720.12	-361.39	1,144.25	1,108.90	35.35	32.373	
4,100.00	3,861.01	3,900.73	3,779.65	27.37	17.23	137.17	746.28	-375.34	1,180.00	1,143.45	36.55	32.288	
4,200.00	3,953.43	3,993.98	3,868.07	28.18	17.83	136.92	772.44	-389.28	1,215.77	1,178.02	37.75	32.209	
4,300.00	4,045.85	4,087.24	3,956.49	28.99	18.42	136.69	798.60	-403.23	1,251.55	1,212.61	38.95	32.135	
4,400.00	4,138.27	4,180.49	4,044.91	29.80	19.01	136.47	824.76	-417.17	1,287.36	1,247.21	40.15	32.065	
4,500.00	4,230.69	4,273.75	4,133.33	30.60	19.61	136.26	850.92	-431.12	1,323.18	1,281.83	41.35	32.001	
4,600.00	4,323.11	4,367.01	4,221.75	31.41	20.20	136.06	877.08	-445.06	1,359.02	1,316.47	42.55	31.940	
4,700.00	4,415.54	4,460.26	4,310.17	32.22	20.80	135.87	903.24	-459.01	1,394.87	1,351.12	43.75	31.882	
4,800.00	4,507.96	4,553.52	4,398.58	33.03	21.40	135.69	929.41	-472.95	1,430.73	1,385.78	44.95	31.828	
4,900.00	4,600.38	4,646.78	4,487.00	33.84	21.99	135.52	955.57	-486.89	1,466.61	1,420.45	46.15	31.777	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,692.80	4,740.03	4,575.42	34.65	22.59	135.35	981.73	-500.84	1,502.49	1,455.14	47.35	31.729	
5,100.00	4,785.22	4,833.29	4,663.84	35.46	23.19	135.20	1,007.89	-514.78	1,538.39	1,489.83	48.55	31.683	
5,192.83	4,871.02	4,919.86	4,745.92	36.21	23.74	135.06	1,032.18	-527.73	1,571.72	1,522.05	49.67	31.643	
5,200.00	4,877.65	4,926.55	4,752.26	36.26	23.78	135.09	1,034.05	-528.73	1,574.29	1,524.53	49.76	31.640	
5,300.00	4,970.81	5,020.23	4,841.08	36.87	24.38	135.41	1,060.33	-542.74	1,608.88	1,557.97	50.91	31.604	
5,400.00	5,065.18	5,114.58	4,930.54	37.42	24.99	135.61	1,086.80	-556.85	1,641.15	1,589.11	52.04	31.536	
5,500.00	5,160.65	5,209.48	5,020.52	37.92	25.60	135.70	1,113.42	-571.04	1,671.10	1,617.95	53.15	31.438	
5,600.00	5,257.10	5,312.19	5,118.02	38.36	26.21	135.65	1,141.93	-586.23	1,698.65	1,644.40	54.25	31.312	
5,700.00	5,354.41	5,427.37	5,228.46	38.75	26.73	135.55	1,170.73	-601.59	1,723.01	1,667.79	55.22	31.203	
5,800.00	5,452.46	5,544.49	5,342.02	39.09	27.21	135.46	1,195.98	-615.04	1,743.92	1,687.84	56.08	31.097	
5,900.00	5,551.14	5,663.30	5,458.32	39.37	27.63	135.38	1,217.39	-626.45	1,761.30	1,704.47	56.83	30.994	
6,000.00	5,650.32	5,783.52	5,576.93	39.61	27.99	135.31	1,234.70	-635.68	1,775.07	1,717.62	57.45	30.895	
6,100.00	5,749.89	5,904.87	5,697.37	39.79	28.29	135.25	1,247.70	-642.61	1,785.20	1,727.24	57.96	30.801	
6,200.00	5,849.72	6,027.02	5,819.13	39.92	28.52	135.20	1,256.24	-647.16	1,791.62	1,733.29	58.33	30.716	
6,300.00	5,949.69	6,149.64	5,941.65	40.01	28.68	135.17	1,260.19	-649.27	1,794.32	1,735.74	58.57	30.633	
6,315.31	5,965.00	6,168.43	5,960.45	40.02	28.70	44.73	1,260.38	-649.37	1,794.40	1,735.80	58.60	30.621	
6,400.00	6,049.69	6,257.67	6,049.69	40.08	28.79	44.72	1,260.48	-649.42	1,794.43	1,735.66	58.76	30.537	
6,500.00	6,149.69	6,357.67	6,149.69	40.15	28.89	44.72	1,260.48	-649.42	1,794.43	1,735.47	58.95	30.438	
6,600.00	6,249.69	6,457.67	6,249.69	40.22	28.99	44.72	1,260.48	-649.42	1,794.43	1,735.28	59.15	30.338	
6,700.00	6,349.69	6,557.67	6,349.69	40.30	29.09	44.72	1,260.48	-649.42	1,794.43	1,735.08	59.34	30.238	
6,800.00	6,449.69	6,657.67	6,449.69	40.37	29.19	44.72	1,260.48	-649.42	1,794.43	1,734.88	59.54	30.136	
6,900.00	6,549.69	6,757.67	6,549.69	40.45	29.29	44.72	1,260.48	-649.42	1,794.43	1,734.68	59.75	30.035	
7,000.00	6,649.69	6,857.67	6,649.69	40.52	29.40	44.72	1,260.48	-649.42	1,794.43	1,734.48	59.95	29.932	
7,100.00	6,749.69	6,957.67	6,749.69	40.60	29.51	44.72	1,260.48	-649.42	1,794.43	1,734.27	60.16	29.829	
7,200.00	6,849.69	7,057.67	6,849.69	40.68	29.61	44.72	1,260.48	-649.42	1,794.43	1,734.06	60.37	29.725	
7,300.00	6,949.69	7,157.67	6,949.69	40.76	29.72	44.72	1,260.48	-649.42	1,794.43	1,733.85	60.58	29.621	
7,400.00	7,049.69	7,257.67	7,049.69	40.84	29.83	44.72	1,260.48	-649.42	1,794.43	1,733.63	60.79	29.516	
7,500.00	7,149.69	7,357.67	7,149.69	40.93	29.95	44.72	1,260.48	-649.42	1,794.43	1,733.41	61.01	29.411	
7,600.00	7,249.69	7,457.67	7,249.69	41.01	30.06	44.72	1,260.48	-649.42	1,794.43	1,733.19	61.23	29.305	
7,700.00	7,349.69	7,557.67	7,349.69	41.10	30.17	44.72	1,260.48	-649.42	1,794.43	1,732.97	61.46	29.199	
7,800.00	7,449.69	7,657.67	7,449.69	41.18	30.29	44.72	1,260.48	-649.42	1,794.43	1,732.74	61.68	29.092	
7,900.00	7,549.69	7,757.67	7,549.69	41.27	30.41	44.72	1,260.48	-649.42	1,794.43	1,732.52	61.91	28.985	
8,000.00	7,649.69	7,857.67	7,649.69	41.36	30.52	44.72	1,260.48	-649.42	1,794.43	1,732.29	62.14	28.878	
8,100.00	7,749.69	7,957.67	7,749.69	41.44	30.64	44.72	1,260.48	-649.42	1,794.43	1,732.05	62.37	28.770	
8,200.00	7,849.69	8,057.67	7,849.69	41.53	30.76	44.72	1,260.48	-649.42	1,794.43	1,731.82	62.61	28.662	
8,238.31	7,888.00	8,095.99	7,888.00	41.57	30.81	44.72	1,260.48	-649.42	1,794.43	1,731.73	62.70	28.621	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 4-1 - P_BERNHARDT 4- - PLAN #1 11-04-09												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.57	0.00	14.57				
100.00	100.00	100.00	100.00	0.10	0.10	0.00	14.57	0.00	14.57	14.38	0.19	76.271	
200.00	200.00	200.00	200.00	0.32	0.32	0.00	14.57	0.00	14.57	13.93	0.64	22.748 CC	
223.24	223.24	223.24	223.24	0.37	0.37	90.80	14.57	0.00	14.57	13.83	0.74	19.621	
300.00	299.98	299.98	299.98	0.53	0.55	97.25	14.57	0.00	14.69	13.61	1.08	13.601 ES	
400.00	399.84	399.84	399.84	0.76	0.77	115.89	14.57	0.00	16.20	14.68	1.52	10.630 SF	
500.00	499.45	499.45	499.45	1.01	0.99	137.17	14.57	0.00	21.50	19.52	1.97	10.888	
600.00	598.70	598.70	598.70	1.30	1.22	152.27	14.57	0.00	31.56	29.14	2.42	13.045	
700.00	697.47	697.47	697.47	1.64	1.44	161.27	14.57	0.00	46.00	43.14	2.86	16.072	
800.00	795.62	795.62	795.62	2.03	1.66	166.64	14.57	0.00	64.38	61.08	3.31	19.466	
900.00	893.06	893.06	893.06	2.48	1.88	170.00	14.57	0.00	86.44	82.69	3.76	23.017	
1,000.00	989.64	990.96	990.96	2.99	2.09	172.17	14.70	-0.26	111.81	107.60	4.21	26.578	
1,100.00	1,085.27	1,090.98	1,090.98	3.56	2.31	173.04	16.12	-3.10	138.30	133.63	4.66	29.668	
1,200.00	1,179.82	1,191.70	1,191.42	4.21	2.53	173.07	19.13	-9.11	165.33	160.20	5.13	32.218	
1,300.00	1,273.17	1,293.09	1,292.27	4.92	2.77	172.59	23.76	-18.35	192.88	187.26	5.62	34.307	
1,322.48	1,293.98	1,315.98	1,314.98	5.09	2.83	172.43	25.03	-20.87	199.14	193.40	5.74	34.715	
1,400.00	1,365.62	1,395.42	1,393.63	5.69	3.04	171.81	30.05	-30.90	219.94	213.76	6.18	35.580	
1,500.00	1,458.05	1,499.20	1,495.85	6.47	3.35	170.70	38.07	-46.93	244.28	237.49	6.79	35.969	
1,600.00	1,550.47	1,604.22	1,598.55	7.26	3.71	169.29	47.88	-66.50	265.84	258.39	7.45	35.669	
1,700.00	1,642.89	1,710.21	1,701.32	8.05	4.13	167.61	59.47	-89.66	284.69	276.51	8.18	34.787	
1,800.00	1,735.31	1,816.88	1,803.72	8.84	4.62	165.65	72.86	-116.38	300.94	291.93	9.01	33.418	
1,900.00	1,827.73	1,923.96	1,905.31	9.64	5.19	163.42	88.00	-146.61	314.72	304.78	9.94	31.660	
2,000.00	1,920.15	2,025.50	2,000.66	10.44	5.80	161.12	103.62	-177.80	326.79	315.82	10.97	29.797	
2,100.00	2,012.57	2,123.98	2,093.07	11.24	6.42	159.02	118.87	-208.25	339.17	327.12	12.05	28.147	
2,200.00	2,105.00	2,222.46	2,185.47	12.04	7.05	157.08	134.12	-238.70	351.96	338.77	13.19	26.679	
2,300.00	2,197.42	2,320.94	2,277.88	12.84	7.70	155.27	149.37	-269.15	365.14	350.75	14.39	25.381	
2,400.00	2,289.84	2,419.42	2,370.29	13.65	8.36	153.58	164.62	-299.60	378.65	363.03	15.62	24.237	
2,500.00	2,382.26	2,517.90	2,462.69	14.45	9.02	152.01	179.87	-330.05	392.46	375.57	16.90	23.229	
2,600.00	2,474.68	2,616.39	2,555.10	15.26	9.70	150.55	195.12	-360.50	406.55	388.35	18.20	22.340	
2,700.00	2,567.10	2,714.87	2,647.51	16.06	10.37	149.19	210.37	-390.95	420.88	401.36	19.53	21.554	
2,800.00	2,659.53	2,813.35	2,739.91	16.87	11.06	147.91	225.62	-421.40	435.43	414.56	20.88	20.858	
2,900.00	2,751.95	2,911.83	2,832.32	17.68	11.74	146.72	240.87	-451.85	450.18	427.94	22.24	20.239	
3,000.00	2,844.37	3,010.31	2,924.72	18.48	12.43	145.60	256.12	-482.30	465.11	441.49	23.62	19.688	
3,100.00	2,936.79	3,108.80	3,017.13	19.29	13.12	144.56	271.37	-512.75	480.21	455.19	25.02	19.194	
3,200.00	3,029.21	3,207.28	3,109.54	20.10	13.82	143.57	286.62	-543.20	495.45	469.02	26.42	18.750	
3,300.00	3,121.63	3,305.76	3,201.94	20.90	14.51	142.65	301.87	-573.65	510.83	482.99	27.84	18.350	
3,400.00	3,214.06	3,404.24	3,294.35	21.71	15.21	141.78	317.12	-604.10	526.33	497.07	29.26	17.989	
3,500.00	3,306.48	3,502.72	3,386.76	22.52	15.90	140.96	332.37	-634.55	541.94	511.25	30.69	17.661	
3,600.00	3,398.90	3,601.21	3,479.16	23.33	16.60	140.18	347.61	-665.00	557.66	525.54	32.12	17.362	
3,700.00	3,491.32	3,699.69	3,571.57	24.14	17.30	139.45	362.86	-695.45	573.47	539.91	33.56	17.090	
3,800.00	3,583.74	3,798.17	3,663.98	24.94	18.00	138.75	378.11	-725.90	589.36	554.37	35.00	16.841	
3,900.00	3,676.16	3,896.65	3,756.38	25.75	18.70	138.10	393.36	-756.35	605.34	568.90	36.44	16.612	
4,000.00	3,768.58	3,995.13	3,848.79	26.56	19.41	137.47	408.61	-786.80	621.39	583.51	37.89	16.401	
4,100.00	3,861.01	4,093.62	3,941.19	27.37	20.11	136.88	423.86	-817.25	637.52	598.18	39.34	16.207	
4,200.00	3,953.43	4,192.10	4,033.60	28.18	20.81	136.32	439.11	-847.70	653.70	612.91	40.79	16.027	
4,300.00	4,045.85	4,290.58	4,126.01	28.99	21.52	135.78	454.36	-878.15	669.94	627.70	42.24	15.861	
4,400.00	4,138.27	4,389.06	4,218.41	29.80	22.22	135.27	469.61	-908.60	686.24	642.55	43.69	15.706	
4,500.00	4,230.69	4,487.54	4,310.82	30.60	22.93	134.78	484.86	-939.05	702.59	657.44	45.15	15.562	
4,600.00	4,323.11	4,586.03	4,403.23	31.41	23.63	134.32	500.11	-969.50	718.98	672.38	46.60	15.428	
4,700.00	4,415.54	4,684.51	4,495.63	32.22	24.34	133.87	515.36	-999.95	735.42	687.37	48.06	15.303	
4,800.00	4,507.96	4,782.99	4,588.04	33.03	25.04	133.45	530.61	-1,030.40	751.90	702.39	49.52	15.185	
4,900.00	4,600.38	4,881.47	4,680.45	33.84	25.75	133.04	545.86	-1,060.85	768.42	717.45	50.97	15.075	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT 4-1 - P_BERNHARDT 4- - PLAN #1 11-04-09												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis			Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,692.80	4,979.95	4,772.85	34.65	26.46	132.65	561.11	-1,091.30	784.98	732.55	52.43	14.972	
5,100.00	4,785.22	5,078.43	4,865.26	35.46	27.16	132.28	576.36	-1,121.75	801.57	747.68	53.89	14.875	
5,192.83	4,871.02	5,169.86	4,951.04	36.21	27.82	131.94	590.52	-1,150.02	817.00	761.76	55.24	14.789	
5,200.00	4,877.65	5,176.92	4,957.67	36.26	27.87	131.94	591.61	-1,152.20	818.19	762.84	55.34	14.784	
5,300.00	4,970.81	5,271.50	5,046.56	36.87	28.50	131.77	606.07	-1,181.07	833.66	777.03	56.63	14.722	
5,400.00	5,065.18	5,363.02	5,133.45	37.42	28.99	131.62	618.95	-1,206.79	847.66	789.93	57.73	14.683	
5,500.00	5,160.65	5,454.80	5,221.45	37.92	29.42	131.48	630.61	-1,230.06	860.24	801.53	58.71	14.652	
5,600.00	5,257.10	5,546.81	5,310.47	38.36	29.82	131.36	641.02	-1,250.86	871.40	811.81	59.59	14.622	
5,700.00	5,354.41	5,639.03	5,400.40	38.75	30.17	131.25	650.17	-1,269.12	881.11	820.74	60.37	14.594	
5,800.00	5,452.46	5,731.44	5,491.11	39.09	30.48	131.15	658.03	-1,284.82	889.36	828.31	61.05	14.567	
5,900.00	5,551.14	5,824.01	5,582.51	39.37	30.74	131.07	664.59	-1,297.92	896.14	834.51	61.63	14.541	
6,000.00	5,650.32	5,916.71	5,674.47	39.61	30.97	130.99	669.83	-1,308.38	901.43	839.33	62.10	14.515	
6,100.00	5,749.89	6,009.53	5,766.88	39.79	31.16	130.92	673.74	-1,316.18	905.23	842.75	62.48	14.488	
6,200.00	5,849.72	6,100.00	5,857.17	39.92	31.30	130.86	676.25	-1,321.21	907.53	844.77	62.76	14.461	
6,300.00	5,949.69	6,195.39	5,952.51	40.01	31.41	130.81	677.52	-1,323.74	908.32	845.37	62.94	14.431	
6,315.31	5,965.00	6,209.63	5,966.75	40.02	31.42	40.36	677.59	-1,323.88	908.30	845.34	62.96	14.426	
6,355.36	6,005.05	6,247.93	6,005.05	40.05	31.46	40.36	677.63	-1,323.96	908.28	845.25	63.03	14.411	
6,400.00	6,049.69	6,292.57	6,049.69	40.08	31.49	40.36	677.63	-1,323.96	908.28	845.18	63.10	14.394	
6,500.00	6,149.69	6,392.57	6,149.69	40.15	31.59	40.36	677.63	-1,323.96	908.28	845.00	63.28	14.353	
6,600.00	6,249.69	6,492.57	6,249.69	40.22	31.68	40.36	677.63	-1,323.96	908.28	844.82	63.46	14.312	
6,700.00	6,349.69	6,592.57	6,349.69	40.30	31.78	40.36	677.63	-1,323.96	908.28	844.63	63.65	14.271	
6,800.00	6,449.69	6,692.57	6,449.69	40.37	31.87	40.36	677.63	-1,323.96	908.28	844.45	63.83	14.229	
6,900.00	6,549.69	6,792.57	6,549.69	40.45	31.97	40.36	677.63	-1,323.96	908.28	844.26	64.02	14.187	
7,000.00	6,649.69	6,892.57	6,649.69	40.52	32.07	40.36	677.63	-1,323.96	908.28	844.07	64.21	14.145	
7,100.00	6,749.69	6,992.57	6,749.69	40.60	32.17	40.36	677.63	-1,323.96	908.28	843.87	64.41	14.102	
7,200.00	6,849.69	7,092.57	6,849.69	40.68	32.27	40.36	677.63	-1,323.96	908.28	843.68	64.61	14.059	
7,300.00	6,949.69	7,192.57	6,949.69	40.76	32.37	40.36	677.63	-1,323.96	908.28	843.48	64.81	14.016	
7,400.00	7,049.69	7,292.57	7,049.69	40.84	32.48	40.36	677.63	-1,323.96	908.28	843.27	65.01	13.972	
7,500.00	7,149.69	7,392.57	7,149.69	40.93	32.58	40.36	677.63	-1,323.96	908.28	843.07	65.21	13.928	
7,600.00	7,249.69	7,492.57	7,249.69	41.01	32.69	40.36	677.63	-1,323.96	908.28	842.86	65.42	13.884	
7,700.00	7,349.69	7,592.57	7,349.69	41.10	32.80	40.36	677.63	-1,323.96	908.28	842.65	65.63	13.840	
7,800.00	7,449.69	7,692.57	7,449.69	41.18	32.91	40.36	677.63	-1,323.96	908.28	842.44	65.84	13.795	
7,900.00	7,549.69	7,792.57	7,549.69	41.27	33.02	40.36	677.63	-1,323.96	908.28	842.23	66.05	13.751	
8,000.00	7,649.69	7,892.57	7,649.69	41.36	33.13	40.36	677.63	-1,323.96	908.28	842.01	66.27	13.706	
8,100.00	7,749.69	7,992.57	7,749.69	41.44	33.24	40.36	677.63	-1,323.96	908.28	841.79	66.49	13.660	
8,200.00	7,849.69	8,092.57	7,849.69	41.53	33.36	40.36	677.63	-1,323.96	908.28	841.57	66.71	13.615	
8,238.31	7,888.00	8,130.88	7,888.00	41.57	33.40	40.36	677.63	-1,323.96	908.28	841.48	66.80	13.598	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT STATE 37-36 - P_BERNHARDT STATE 37-36													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.79	0.00	32.79				
100.00	100.00	100.00	100.00	0.10	0.10	0.00	32.79	0.00	32.79	32.60	0.19	171.610	
200.00	200.00	200.00	200.00	0.32	0.32	0.00	32.79	0.00	32.79	32.15	0.64	51.182 CC, ES	
300.00	299.98	299.08	299.06	0.53	0.54	95.31	34.02	1.19	34.17	33.10	1.08	31.772	
400.00	399.84	397.56	397.40	0.76	0.77	107.39	37.69	4.73	39.59	38.07	1.52	26.079	
500.00	499.45	494.84	494.32	1.01	1.01	120.68	43.69	10.53	51.32	49.34	1.98	25.971 SF	
600.00	598.70	590.36	589.15	1.30	1.28	130.96	51.89	18.44	70.37	67.93	2.44	28.844	
700.00	697.47	683.61	681.31	1.64	1.58	137.86	62.09	28.28	96.50	93.59	2.91	33.155	
800.00	795.62	774.12	770.28	2.03	1.91	142.32	74.04	39.82	129.17	125.77	3.39	38.064	
900.00	893.06	861.49	855.63	2.48	2.28	145.22	87.49	52.80	167.88	163.99	3.89	43.147	
1,000.00	989.64	945.39	937.01	2.99	2.67	147.13	102.16	66.97	212.23	207.83	4.40	48.186	
1,100.00	1,085.27	1,025.55	1,014.17	3.56	3.07	148.38	117.78	82.04	261.86	256.93	4.93	53.071	
1,200.00	1,179.82	1,100.00	1,085.27	4.21	3.49	149.14	133.67	97.38	316.44	310.96	5.48	57.785	
1,300.00	1,273.17	1,173.86	1,155.21	4.92	3.94	149.64	150.74	113.85	375.62	369.57	6.05	62.109	
1,322.48	1,293.98	1,189.49	1,169.93	5.09	4.04	149.71	154.52	117.50	389.53	383.35	6.18	63.065	
1,400.00	1,365.62	1,242.32	1,219.47	5.69	4.39	150.42	167.72	130.24	438.41	431.76	6.66	65.860	
1,500.00	1,458.05	1,308.36	1,280.92	6.47	4.84	151.07	185.14	147.06	503.02	495.74	7.28	69.103	
1,600.00	1,550.47	1,377.24	1,344.46	7.26	5.35	151.53	204.26	165.52	569.11	561.19	7.92	71.825	
1,700.00	1,642.89	1,451.99	1,413.33	8.05	5.90	151.92	225.18	185.70	635.46	626.87	8.59	73.958	
1,800.00	1,735.31	1,526.75	1,482.20	8.84	6.46	152.24	246.09	205.89	701.83	692.56	9.27	75.743	
1,900.00	1,827.73	1,601.50	1,551.07	9.64	7.03	152.50	267.01	226.08	768.20	758.26	9.94	77.247	
2,000.00	1,920.15	1,676.25	1,619.94	10.44	7.60	152.72	287.92	246.27	834.58	823.95	10.63	78.520	
2,100.00	2,012.57	1,751.01	1,688.81	11.24	8.17	152.91	308.84	266.46	900.97	889.66	11.32	79.618	
2,200.00	2,105.00	1,825.76	1,757.68	12.04	8.74	153.07	329.75	286.65	967.36	955.36	12.01	80.572	
2,300.00	2,197.42	1,900.51	1,826.55	12.84	9.31	153.22	350.67	306.84	1,033.76	1,021.06	12.70	81.408	
2,400.00	2,289.84	1,975.27	1,895.41	13.65	9.89	153.34	371.58	327.03	1,100.16	1,086.77	13.39	82.142	
2,500.00	2,382.26	2,050.02	1,964.28	14.45	10.46	153.45	392.50	347.22	1,166.56	1,152.47	14.09	82.794	
2,600.00	2,474.68	2,124.77	2,033.15	15.26	11.04	153.55	413.42	367.40	1,232.97	1,218.18	14.79	83.377	
2,700.00	2,567.10	2,199.52	2,102.02	16.06	11.61	153.64	434.33	387.59	1,299.38	1,283.89	15.49	83.901	
2,800.00	2,659.53	2,274.28	2,170.89	16.87	12.19	153.72	455.25	407.78	1,365.78	1,349.60	16.19	84.371	
2,900.00	2,751.95	2,349.03	2,239.76	17.68	12.77	153.79	476.16	427.97	1,432.19	1,415.30	16.89	84.799	
3,000.00	2,844.37	2,423.78	2,308.63	18.48	13.35	153.86	497.08	448.16	1,498.60	1,481.01	17.59	85.188	
3,100.00	2,936.79	2,498.54	2,377.50	19.29	13.92	153.92	517.99	468.35	1,565.02	1,546.72	18.29	85.544	
3,200.00	3,029.21	2,573.29	2,446.37	20.10	14.50	153.97	538.91	488.54	1,631.43	1,612.43	19.00	85.870	
3,300.00	3,121.63	2,648.04	2,515.24	20.90	15.08	154.02	559.82	508.73	1,697.84	1,678.14	19.70	86.170	
3,400.00	3,214.06	2,722.80	2,584.11	21.71	15.66	154.07	580.74	528.92	1,764.26	1,743.85	20.41	86.447	
3,500.00	3,306.48	2,797.55	2,652.98	22.52	16.24	154.12	601.66	549.10	1,830.67	1,809.56	21.11	86.703	
3,600.00	3,398.90	2,872.30	2,721.85	23.33	16.82	154.16	622.57	569.29	1,897.09	1,875.27	21.82	86.941	
3,700.00	3,491.32	2,947.05	2,790.71	24.14	17.40	154.19	643.49	589.48	1,963.50	1,940.98	22.53	87.163	
3,800.00	3,583.74	3,021.81	2,859.58	24.94	17.98	154.23	664.40	609.67	2,029.92	2,006.68	23.23	87.369	
3,900.00	3,676.16	3,096.56	2,928.45	25.75	18.56	154.26	685.32	629.86	2,096.34	2,072.39	23.94	87.562	
4,000.00	3,768.58	3,171.31	2,997.32	26.56	19.14	154.29	706.23	650.05	2,162.75	2,138.10	24.65	87.743	
4,100.00	3,861.01	3,246.07	3,066.19	27.37	19.72	154.32	727.15	670.24	2,229.17	2,203.81	25.36	87.913	
4,200.00	3,953.43	3,320.82	3,135.06	28.18	20.30	154.35	748.06	690.43	2,295.59	2,269.52	26.06	88.073	
4,300.00	4,045.85	3,395.57	3,203.93	28.99	20.88	154.38	768.98	710.62	2,362.01	2,335.23	26.77	88.223	
4,400.00	4,138.27	3,470.33	3,272.80	29.80	21.46	154.40	789.90	730.80	2,428.42	2,400.94	27.48	88.365	
4,500.00	4,230.69	3,545.08	3,341.67	30.60	22.04	154.43	810.81	750.99	2,494.84	2,466.65	28.19	88.499	
4,600.00	4,323.11	3,619.83	3,410.54	31.41	22.63	154.45	831.73	771.18	2,561.26	2,532.36	28.90	88.626	
4,700.00	4,415.54	3,694.58	3,479.41	32.22	23.21	154.47	852.64	791.37	2,627.68	2,598.07	29.61	88.746	
4,800.00	4,507.96	3,769.34	3,548.28	33.03	23.79	154.49	873.56	811.56	2,694.10	2,663.78	30.32	88.861	
4,900.00	4,600.38	3,844.09	3,617.14	33.84	24.37	154.51	894.47	831.75	2,760.52	2,729.49	31.03	88.969	
5,000.00	4,692.80	3,918.84	3,686.01	34.65	24.95	154.53	915.39	851.94	2,826.94	2,795.20	31.74	89.072	

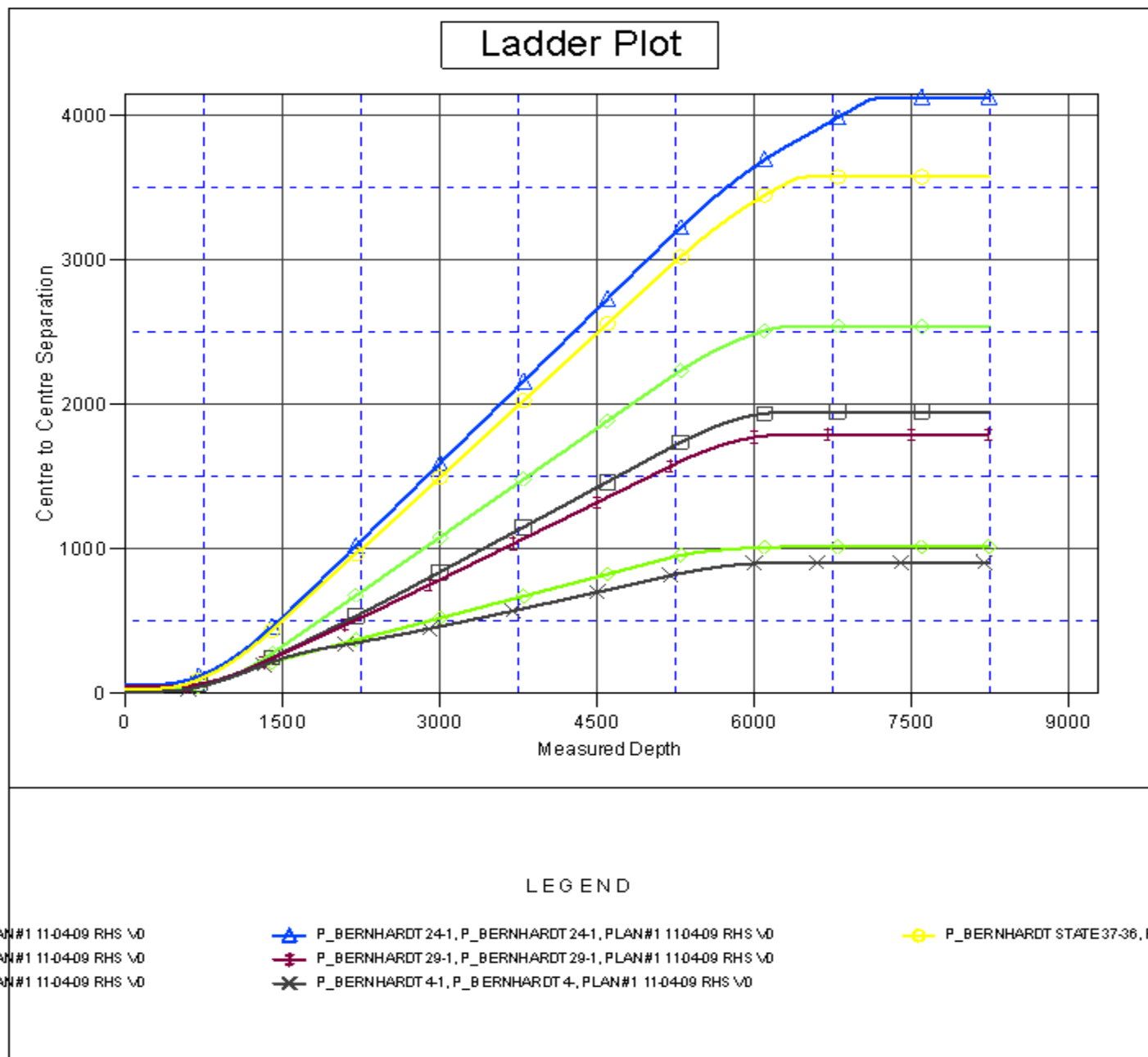
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_BERNHARDT 8 PAD 4N67W1 - P_BERNHARDT STATE 37-36 - P_BERNHARDT STATE 37-36												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,785.22	3,993.60	3,754.88	35.46	25.53	154.54	936.30	872.13	2,893.36	2,860.91	32.45	89.171	
5,192.83	4,871.02	4,062.99	3,818.82	36.21	26.07	154.56	955.72	890.87	2,955.02	2,921.91	33.11	89.258	
5,200.00	4,877.65	4,068.36	3,823.76	36.26	26.11	154.62	957.22	892.32	2,959.77	2,926.60	33.17	89.227	
5,300.00	4,970.81	4,144.29	3,893.72	36.87	26.70	155.33	978.47	912.83	3,024.83	2,990.78	34.04	88.853	
5,400.00	5,065.18	4,222.24	3,965.53	37.42	27.31	155.96	1,000.28	933.88	3,087.44	3,052.54	34.90	88.468	
5,500.00	5,160.65	4,302.10	4,039.10	37.92	27.93	156.49	1,022.62	955.44	3,147.54	3,111.81	35.73	88.085	
5,600.00	5,257.10	4,383.77	4,114.34	38.36	28.57	156.95	1,045.47	977.50	3,205.06	3,168.52	36.54	87.714	
5,700.00	5,354.41	4,467.15	4,191.17	38.75	29.22	157.33	1,068.80	1,000.02	3,259.93	3,222.62	37.31	87.363	
5,800.00	5,452.46	4,552.15	4,269.48	39.09	29.88	157.65	1,092.59	1,022.98	3,312.09	3,274.04	38.05	87.038	
5,900.00	5,551.14	4,638.67	4,349.18	39.37	30.55	157.91	1,116.79	1,046.34	3,361.49	3,322.74	38.75	86.742	
6,000.00	5,650.32	4,726.58	4,430.17	39.61	31.23	158.12	1,141.39	1,070.09	3,408.08	3,368.68	39.41	86.480	
6,100.00	5,749.89	4,815.79	4,512.36	39.79	31.93	158.27	1,166.35	1,094.18	3,451.82	3,411.80	40.02	86.252	
6,200.00	5,849.72	4,906.19	4,595.65	39.92	32.63	158.38	1,191.64	1,118.60	3,492.66	3,452.07	40.58	86.062	
6,300.00	5,949.69	4,997.67	4,679.93	40.01	33.34	158.43	1,217.24	1,143.30	3,530.56	3,489.46	41.10	85.909	
6,315.31	5,965.00	5,011.77	4,692.92	40.02	33.45	68.01	1,221.18	1,147.11	3,536.10	3,494.93	41.17	85.888	
6,400.00	6,049.69	5,089.79	4,764.80	40.08	34.06	67.79	1,243.01	1,168.18	3,566.59	3,524.98	41.61	85.713	
6,500.00	6,149.69	6,514.36	6,149.69	40.15	39.07	66.03	1,439.01	1,357.37	3,578.03	3,532.77	45.25	79.066	
6,600.00	6,249.69	6,614.36	6,249.69	40.22	39.15	66.03	1,439.01	1,357.37	3,578.03	3,532.54	45.49	78.658	
6,700.00	6,349.69	6,714.36	6,349.69	40.30	39.22	66.03	1,439.01	1,357.37	3,578.03	3,532.30	45.73	78.250	
6,800.00	6,449.69	6,814.36	6,449.69	40.37	39.30	66.03	1,439.01	1,357.37	3,578.03	3,532.06	45.97	77.840	
6,900.00	6,549.69	6,914.36	6,549.69	40.45	39.37	66.03	1,439.01	1,357.37	3,578.03	3,531.81	46.21	77.429	
7,000.00	6,649.69	7,014.36	6,649.69	40.52	39.45	66.03	1,439.01	1,357.37	3,578.03	3,531.57	46.46	77.017	
7,100.00	6,749.69	7,114.36	6,749.69	40.60	39.53	66.03	1,439.01	1,357.37	3,578.03	3,531.32	46.71	76.605	
7,200.00	6,849.69	7,214.36	6,849.69	40.68	39.61	66.03	1,439.01	1,357.37	3,578.03	3,531.06	46.96	76.192	
7,300.00	6,949.69	7,314.36	6,949.69	40.76	39.69	66.03	1,439.01	1,357.37	3,578.03	3,530.81	47.22	75.779	
7,400.00	7,049.69	7,414.36	7,049.69	40.84	39.77	66.03	1,439.01	1,357.37	3,578.03	3,530.55	47.48	75.366	
7,500.00	7,149.69	7,514.36	7,149.69	40.93	39.85	66.03	1,439.01	1,357.37	3,578.03	3,530.29	47.74	74.953	
7,600.00	7,249.69	7,614.36	7,249.69	41.01	39.93	66.03	1,439.01	1,357.37	3,578.03	3,530.02	48.00	74.540	
7,700.00	7,349.69	7,714.36	7,349.69	41.10	40.02	66.03	1,439.01	1,357.37	3,578.03	3,529.76	48.27	74.128	
7,800.00	7,449.69	7,814.36	7,449.69	41.18	40.11	66.03	1,439.01	1,357.37	3,578.03	3,529.49	48.54	73.715	
7,900.00	7,549.69	7,914.36	7,549.69	41.27	40.19	66.03	1,439.01	1,357.37	3,578.03	3,529.21	48.81	73.304	
8,000.00	7,649.69	8,014.36	7,649.69	41.36	40.28	66.03	1,439.01	1,357.37	3,578.03	3,528.94	49.09	72.893	
8,100.00	7,749.69	8,114.36	7,749.69	41.44	40.37	66.03	1,439.01	1,357.37	3,578.03	3,528.66	49.36	72.483	
8,200.00	7,849.69	8,214.36	7,849.69	41.53	40.46	66.03	1,439.01	1,357.37	3,578.03	3,528.38	49.64	72.074	
8,238.31	7,888.00	8,252.67	7,888.00	41.57	40.49	66.03	1,439.01	1,357.37	3,578.03	3,528.27	49.75	71.918	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

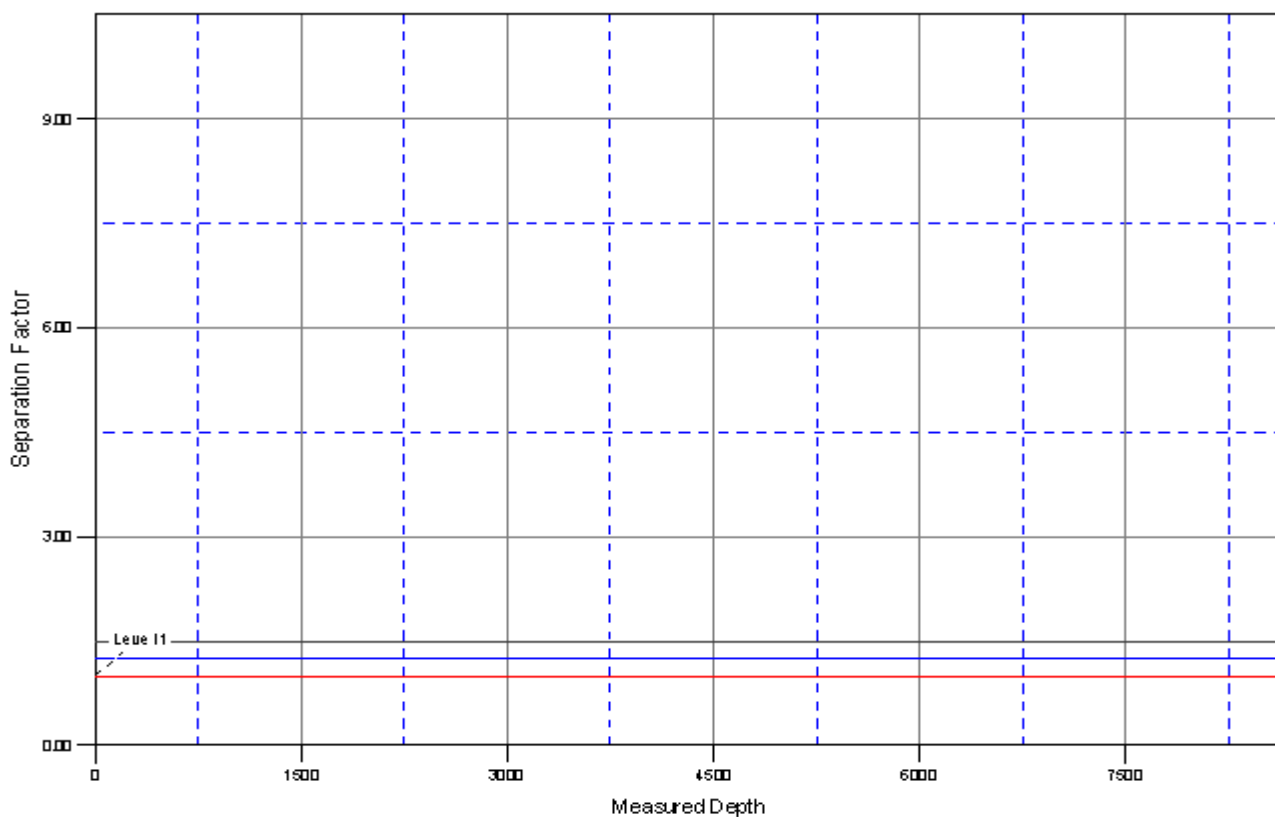
Reference Depths are relative to WELL @ 4840.00ft (Original Well Elev) Coordinates are relative to: P\_BERNHARDT 31-1  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.000 W °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.43°







<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_BERNHARDT 31-1
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_BERNHARDT 8 PAD 4N67W1	<b>MD Reference:</b>	WELL @ 4840.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_BERNHARDT 31-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_BERNHARDT 31-1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 11-04-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4840.00ft (Original Well Elev) Coordinates are relative to: P\_BERNHARDT 31-1  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.43°

## Separation Factor Plot



### LEGEND

PLAN#1 11-04-09 RHS \0	 P_BERNHARDT 24-1, P_BERNHARDT 24-1, PLAN#1 11-04-09 RHS \0	 P_BERNHARDT STATE 37-36, P_E
PLAN#1 11-04-09 RHS \0	 P_BERNHARDT 29-1, P_BERNHARDT 29-1, PLAN#1 11-04-09 RHS \0	
PLAN#1 11-04-09 RHS \0	 P_BERNHARDT 4-1, P_BERNHARDT 4-1, PLAN#1 11-04-09 RHS \0	